INSIDE: HOW DID WOLF 57 GET TO KALISPELL?

Montana Outdoors

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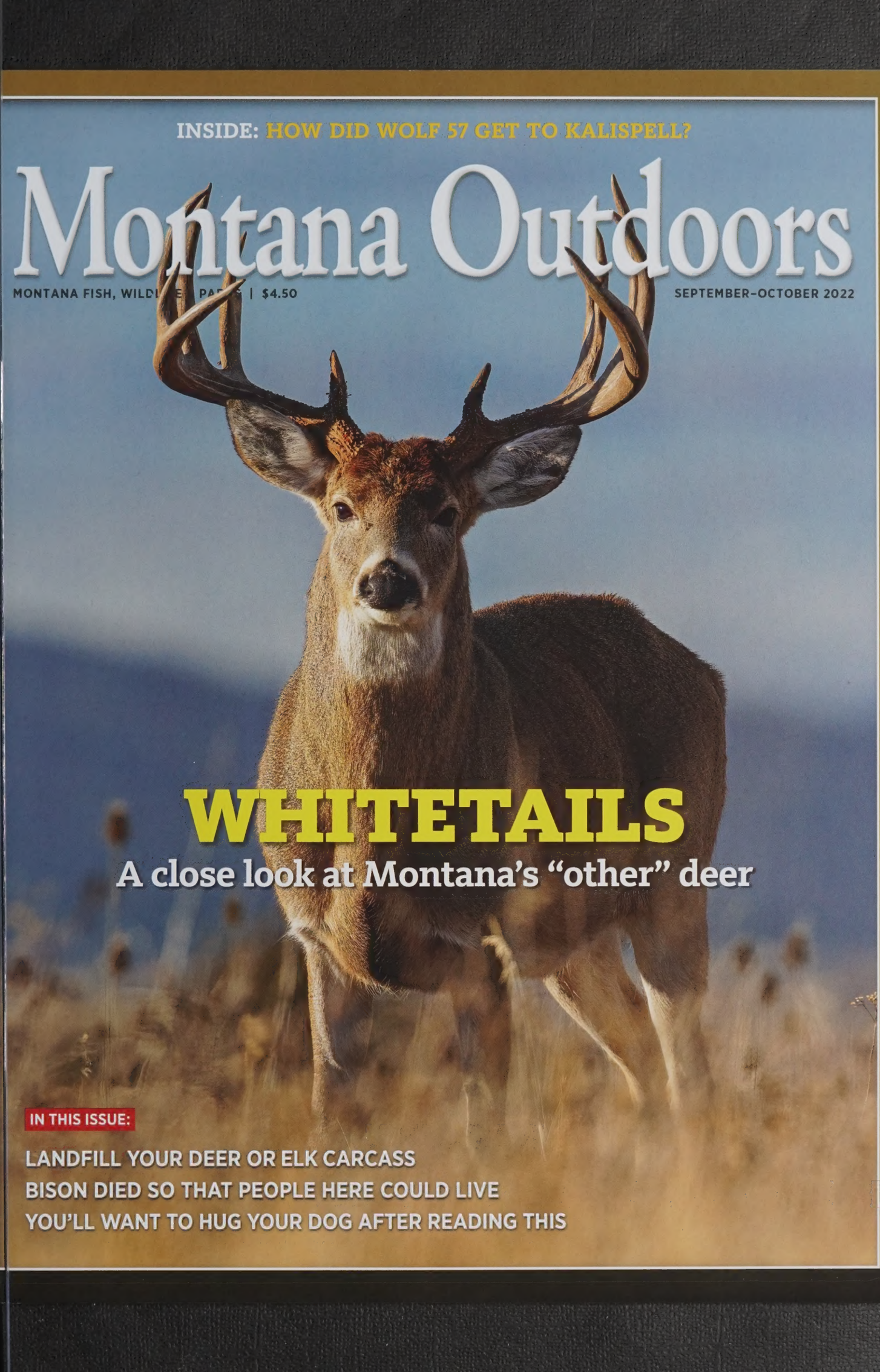
SEPTEMBER–OCTOBER 2022



WHITETAILS

A close look at Montana's "other" deer

IN THIS ISSUE:

LANDFILL YOUR DEER OR ELK CARCASS

BISON DIED SO THAT PEOPLE HERE COULD LIVE

YOU'LL WANT TO HUG YOUR DOG AFTER READING THIS

Montana Outdoors

FIRST PLACE MAGAZINE:
2005, 2006, 2008, 2011, 2017, 2018, 2022
Association for
Conservation Information

MONTANA OUTDOORS
VOLUME 53, NUMBER 5

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FANCIFUL DEPICTION *Driving Buffalo Over the Cliff*, by Charles M. Russell, 1914. Despite Russell's imaginative watercolor, located in the eponymous museum in Great Falls, use of buffalo jumps like the one at nearby First Peoples Buffalo Jump State Park were sophisticated operations conducted by people on foot, not horseback. Learn more on page 32.

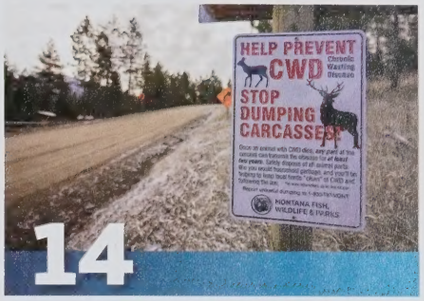
COVER Whitetail buck in Lake County. Photo by Mark Peters.

Montana Outdoors

SEPTEMBER–OCTOBER 2022

FEATURES

14 Don't Move CWD Around
How following Montana's big game carcass disposal regulations can help contain the disease. *By Paul Queneau*



16 What About Whitetails?
They may not attract as much attention as elk, bighorn sheep, and mule deer, but as they've steadily spread across Montana, white-tailed deer have become a Treasure State mainstay. *By Andrew McKean*

24 The Curious Case of Wolf 57 In December 2021, FWP wildlife biologist Wendy Cole received a tattered radio collar covered in moss and shrouded in mystery. Solving the puzzle ended up shedding further light on the impressive movements of wildlife. *By Dillon Tabish. Photos by Hunter D'Antuono*

26 My Seasons with Bear
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32 A Place of Prominence
First Peoples Buffalo Jump State Park showcases a revered cultural landmark used by Native people to harvest bison for more than 600 years. *By Peggy O'Neill*

40 How Prevalent is CWD?
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Coexisting with beavers

Thank you for your excellent article, "Leave It to Beavers," (May-June 2022) about the many ways that beavers benefit Montana farmers, ranchers, communities, and wildlife. In Montana and across the country, the use of pond levelers, fencing, and other nonlethal techniques to reduce human-beaver conflicts is inspiring—and sensible. These devices prevent property damage while enabling beavers and other wildlife to thrive. Additionally, they are more effective than lethal removal because beavers will, inevitably, return. For these reasons, the Animal Welfare Institute is asking Congress to enact a federal grant program that would provide funding to tribes, wildlife agencies, local governments, landowners, and others engaged in nonlethal beaver management. Endorsed by more than 100 organizations and small businesses nationwide, including several here in Montana, this program would promote ethical, ecologically responsible solutions to mitigate beaver damage while protecting this keystone species.

Zack Strong
Senior Staff Attorney
Animal Welfare Institute, Bozeman

No arrowhead collecting

I want *Montana Outdoors* readers to know that collecting arrowheads or other artifacts on any public property is unlawful and unethical. Your suggestion in the July-August 2022 "Next 100" issue ("No. 32: Find an arrowhead") fails to mention the illegality of collecting on state parks and other state lands. In addition to arrowheads, artifacts include all stone tools, flakes from the production of stone tools, butchered or otherwise modified

SPECIAL REPORT
Leave It to Beavers
Under the right conditions, these big, chisel-toothed rodents are transforming Montana's environments (mostly) for the better. BY TOM DICKSON

animal bones, pottery, coins, and anything else made or used by humans that's over 50 years old. The reason for state and federal laws protecting artifacts is that removing them disrupts the archaeological record of a site. Once an artifact is moved, the vital information its context can provide is lost forever.

Rachel Reckin, PhD
Manager
FWP Heritage Resource Program

Beware of the slippery slope

The FWP director's message ("Finding access solutions for elk management and elk hunting," Our Point of View, March-April 2022) seems to pave the way for handing out bull tags to noncompliant landowners. I strongly disagree that most hunters would be happy to have a cow tag, knowing that FWP has handed over trophy opportunities to those who choose not to allow access. There have been numerous elk management groups convened over the past 30 years, always with the same result: an impasse over reasonable access to some private lands because of a lack of legal options. However, the legislature does have the ability, but probably not the will, to provide FWP with additional tools to deal with this over-argued problem. We seem to be straying further away from the public trust doctrine of the North American Model of Wildlife Conservation with each legislative session in Montana. Director Hank Worsech doesn't think commercialization/privatization will happen in Montana. Beware of the slippery slope.

Gary Olson
Great Falls

Outstanding

Your May-June 2022 issue is just outstanding, in particular the excellent, visually attractive piece on beavers, which gets it right on everything I've read about them, including the most up-to-date ways of mitigating their effect on roads, etc. And it was beautifully written. The other piece I thought was timely, hopeful, and "visionary" was "Leaving Some for the Fish," on stakeholders getting together and keeping water in the river during stressful times. I only wish the Jefferson and Gallatin rivers had such commitments.

Mike Becker
Harrison

Far from accurate

In his essay, "Carping about fishing" (Sketchbook, May-June 2022), Tom Dickson's claims are far from accurate. For example, the FWP FishMT website shows that many of the walleye lakes that western Montana fishermen could access are not managed for walleye. Holter, Hauser, and Canyon Ferry reservoirs have had very liberal walleye limits for years and have never received any walleye stocking. However, all three receive hundreds of thousands of rainbow trout each year. Even Tiber Reservoir and Fresno Reservoir, which are two quality walleye fisheries, receive more rainbow trout plants than walleye. To imply that our walleye waters are on par with midwestern states, such as Minnesota, is simply not true. Outside of Fort Peck, our state does not stock walleye in abundance or promote a vibrant warmwater fishery.

Blaine Goosen
Great Falls

More to the photo

I love *Montana Outdoors*. On page 7 of the March-April 2022 issue, what is the bright light in the background of that remarkable ferret photo?

Noreen Breeding
Bozeman

Editor replies: See the photographer's response and additional images from his shoot on pages 8-9.

CORRECTIONS

A few readers noticed that our Next 100 issue (July-August 2022) repeated, from our Best 100 issue, both "Visit Red Rock Lakes National Wildlife Refuge" and "See a long-billed curlew." Also in the Next 100 issue, we should have noted in "No. 25: Learn to identify 20 wildflowers," that glacier lilies and beargrass are "mostly" west of the Continental Divide, not "only." Both show up on the east side of the Divide in some high-elevation forests. ■

Venison Schmeatloaf

By David Schmetterling | Preparation time: 10 minutes | Cooking time: 1 hour | Serves 8

INGREDIENTS

Meat mixture

2 lbs. deer, elk, or pronghorn burger
2 eggs, beaten
1 c. bread crumbs
⅔ c. ketchup
⅓ c. diced green onions

Filling

3 cloves garlic, finely chopped
¼ c. olive oil
⅓ c. bread crumbs
⅔ c. shredded mozzarella cheese
⅔ c. grated Parmesan cheese
⅓ c. chopped basil
Salt and pepper to taste
Ketchup

DIRECTIONS

Heat oven to 350 degrees.

In a large bowl, combine the meat-mixture ingredients and stir together. Put half into a loaf pan, pressing down lightly to form an even, flat surface, and reserve the rest.

Mix filling ingredients in a medium bowl and pour half over the center of the meat layer in the pan, keeping it away from the edges. Put the remaining meat mixture on top and form a loaf with your hands. Cover the top with the rest of the filling and drizzle ketchup on top of that.

Bake for 1 hour, uncovered. Let stand 15 minutes before serving.

Serve with mashed potatoes.

Meatloaf is a great comfort food. It's delicious, filling, and easy to prepare and cook.

For these reasons, it's now a staple of my hunting camps, whether warmed up on a wall tent woodstove or cooked in my camper's oven. It's even become a good-luck meal the night before hunting trips. On top of all that, meatloaf is the dish that keeps on giving—providing several dinners or meatloaf-and-mashed-potato sandwiches with the leftovers.

Meatloaf, in all its varieties, is popular around the world. The Austrian version, *faschierter braten* ("minced roast"), is wrapped in ham before baking. In Italy, Turkey, Hungary, and many other countries, the dish is stuffed with hard-boiled eggs. The Vietnamese call their meatloaf *chả* and boil it rather than bake it.

I enjoy many versions. This particular one—which a friend has jokingly named after me—is great for all big game burger, and it's always a hit at hunting camp. The recipe has two parts: the meat mixture and the special filling that's in the center and on top (not shown in photo).

I can't guarantee that this dish will ensure good luck on your next hunting trip. But I promise that you and your hunting companions will eat well. ■

—David Schmetterling is the FWP Fisheries Research Program coordinator in Missoula.

SHUTTERSTOCK

More access, more handshakes

I've long believed that one of the most important things people can do is build strong, trusting relationships. That's one reason I'm so pleased with the success of FWP's 2021 Elk Hunting Access Agreements and our recent changes to make the program more transparent.

The relationships in this case are between hunters and landowners. FWP has a long history of finding ways to strengthen bonds between those two. In the 1930s Montana created its first wildlife management areas, then called game refuges, when our department purchased, with hunter support and license dollars, key winter elk habitat to keep herds from migrating to lower elevations and eating hay on nearby ranches.

Hunter-landowner partnerships expanded throughout the 20th century, with hunters strongly supporting state programs that pay landowners for conservation work and public hunting access. FWP's Game Bird Enhancement Program, Block Management Program, conservation easements, and other programs now provide landowners with nearly $30 million in direct cash payments each year. FWP's popular Block Management Program fosters strong relations between landowners and hunters, and Montana's Private Land/Public Wildlife Council, still going strong after 26 years, further strengthens those bonds.

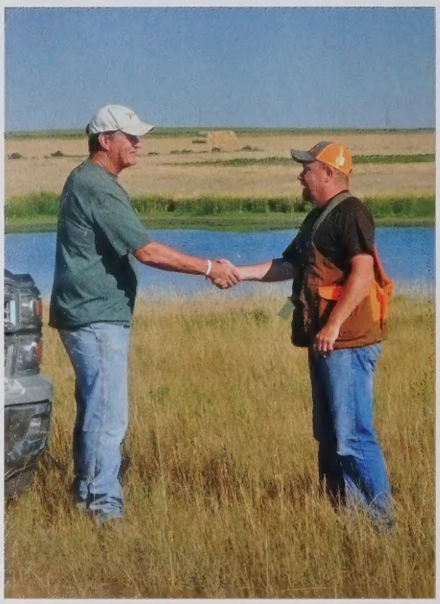
Add to that the thousands of relationships and even close friendships developed independently between hunters and landowners who allow public hunting on their property.

In 2001, the Montana Legislature created what is now the Elk Hunting Access (EHA) Agreement Program to provide more incentives for landowners to allow public hunting access on their land. For 20 years, FWP issued almost none of these agreements (previously called 454 agreements for the legislation creating the program). Changes by the Montana Legislature and FWP have made the program more enticing to landowners, and as a result applications have grown. The number of EHA agreements authorized by the Fish and Wildlife Commission has grown from two in 2020 to 13 in 2021 and 37 for 2022.

Through the EHA Program, qualifying landowners receive either-sex (bull) permits, which they cannot sell and can transfer only to an immediate family member or full-time employee. In return, they must allow onto their property three public elk hunters—one they can pick themselves and two others that FWP selects at random from the successful elk permit or elk B license lists.

EHA landowners often grant far more public hunting than required. Last year, the agreements required that a minimum total of 84 public hunters be given free access. But landowners offered antlerless hunting opportunities to 540 public hunters and either-sex opportunities to another 124. Almost all were resident Montana hunters. So far, 24 of the 37 landowners for 2022 have indicated they will provide access beyond the three-hunter minimum.

Of course, some of these landowners are in Block Management and would have provided those opportunities anyway, even if they hadn't been given the landowner permits. But the point is that when they got the tags, they didn't pull out of Block Management, as some EHA critics predicted.



Even more important than all the additional public hunting opportunities on private land are the relationships being built between hunters and participating landowners.

For me, even more important than all the additional public hunting opportunities on private land are the relationships being built between hunters and participating landowners.

These hunters and landowners call or email each other. They often meet in person. Last year some EHA landowners provided guides to help hunters find elk, and then brought in ranch vehicles to help haul the harvested animals. "Those guys were really nice," answered one hunter in a survey we recently conducted to help improve the program. "They helped me with everything!" A hunter who was allowed to kill a 7x6 bull in HD 411 told us: "It was cool to hunt an area that hasn't been open to the public in the past and has some of the biggest bulls in the state."

FWP has recently improved the program further by making the process more transparent by setting an application period, documenting hunter use, and conducting post-season evaluations. Now all hunters, landowners, and others can see who applies for the EHA permits, who receives them, and the parameters of each agreement.

It's all there out in the open, available for public review and discussion.

In our survey, one HD 411 hunter wrote: "I really encourage this program. I'm all for FWP talking and working with the landowners."

So am I. And I promise that through this program and others, we'll be doing even more relationship-building in the future.

—**Hank Worsech**, Director, Montana Fish, Wildlife & Parks

FWP

SEAN R. HEAVEY

UPLAND BIRD HOME BUILDER

KEN PLOURDE
Regional Upland Game Bird Habitat Specialist, Glasgow

FWP HAS THREE upland game bird habitat specialists: me, one based in Miles City, and another in Great Falls. Our job is to help hunters (who fund the Upland Game Bird Enhancement Program with their license dollars and federal excise taxes), landowners (who plant the habitat projects), and the upland birds and other wildlife that benefit from the habitat.

I work mostly with farmers and ranchers to help them put habitat projects on the ground and provide hunter access. I design projects to fit their needs, then purchase materials like trees and weed fabric, and reimburse them for grass and forb seed they buy. We plant woody species like junipers, chokecherries, and buffaloberries for winter shelterbelts that give birds warm places to escape cold, snowy weather. Behind me in this photo is a shelterbelt of blue spruce planted years ago by one of my predecessors, along with rows of different shrub species hidden behind the conifers.

We also plant nesting and brood cover such as wheatgrasses, native bunchgrasses, alfalfa, prairie clover, sunflower, and flax, along with various other flowering plants.

I get a lot of satisfaction from seeing these projects come together and knowing that I'm assisting farming families in meeting their goals, while providing access to bird hunters and helping game birds as well as songbirds and pollinators like bees and butterflies.

I'm originally from New Hampshire, but I went to college in Missoula and then made my way out here to northeastern Montana. I love to chase upland birds with my German wirehaired pointer and Irish setter. For a person who likes hunting sharptails, gray partridge, and pheasants behind pointing dogs, it would be hard to find a better place to live and work than right here.

Hunters can pick up a copy of the *2022 UGBEP Projects Access Guide*, showing all recent enhancement projects, at regional FWP offices or the FWP headquarters office in Helena. If you'd like the guide mailed to your home, visit the FWP website, search for "UGBEP Guide," and fill out the online form.

Barbara Garten of Hamilton was hiking with her dogs in Blodgett Canyon last October when she came upon this stunning autumn vista. "There's a lot to like in this photo, with the bright fall colors, the reflections in the water, the distinctive geology of the canyon, and the sky," says Garten, an amateur photographer who takes classes and workshops to improve her craft. "I especially like those fallen dead tree trunks because they add even more visual interest to the image." Blodgett Canyon, which sits in the Bitterroot Mountains a few miles west of Hamilton, is a popular hiking spot. "It's always beautiful there, but it was especially so that day," Garten says. ■

SNAPSHOT, REVISITED

Our March-April 2022 Snapshot photo garnered a number of questions from readers who wanted to know about the light in the background and how the photographer, John Ashley, achieved this remarkable shot. Ashley explains:

This photo is a 12-second exposure with the black-footed ferret lit by a camera flash and the foreground lit by a flashlight. That light in the background is the lead biologist, Randy Matchett, spotlighting for ferrets while driving his U.S. Fish & Wildlife Service truck on the other side of the prairie dog town at U.L. Bend National Wildlife Refuge. You can see the spotlight beam reaching out to the left, ahead of the truck headlights.

Native ferrets are nocturnal, so to monitor them we drive slowly around the prairie dog town between about 11 p.m. and dawn, shining a spotlight back and forth looking for ferret eyeshine. When we see its emerald-green glow (a different color from the eyeshine of deer, coyotes, owls, and other critters), we stop and try to memorize which of the countless identical burrows that particular ferret just disappeared into. Then we run over and place a battery-powered scanner over the entrance, mark the location, and drive away. We then check on the scanner later that night or at dawn.

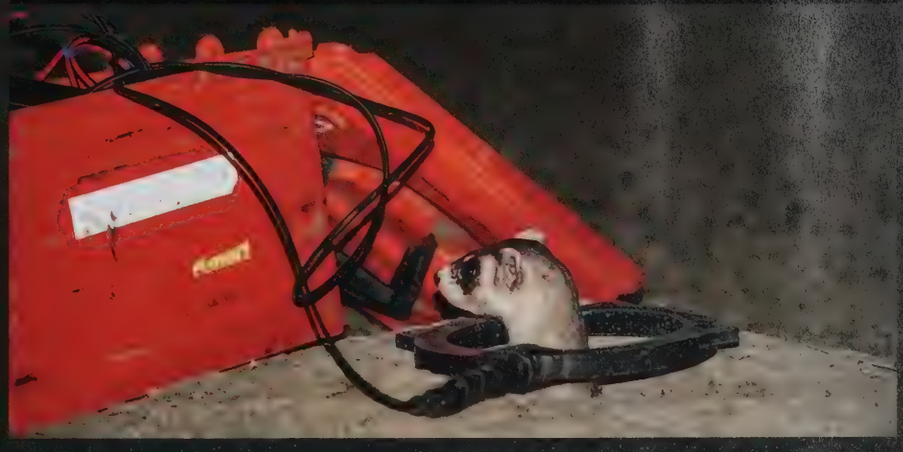
All the ferrets (except newborn kits) have a pit tag beneath

Above: USFWS wildlife biologist Randy Matchett spotlights for ferrets from his truck.

Left: Ferret eyeshine is a particular shade of green.

Below: Matchett approaches a ferret in a prairie dog burrow to place a pit tag scanner over the entrance.

Bottom: The scanner reads the pit tag number when (if) the ferret resurfaces.



their skin between their front shoulders (like what vets use on dogs and cats).

If the ferret sticks its head up above ground (before the battery dies in a few hours), the reader scans the pit tag and we identify that individual ferret. Randy tracks every single ferret. Over time, these data points give him information on ferret survival, female productivity, individual ranges, and movements.

It's good work for a night owl like me, but it requires staying awake for many hours at a time. I don't know how Randy has survived so many years of sleep deprivation. ■

OUTDOORS REPORT

26,005 Total 2021 Montana elk harvest

(bulls: 13,088; cows: 12,340; calves: 577)

A crew manages a controlled burn designed to rejuvenate grasses and kill encroaching shrubs and trees.

FWP magazine, website, and social media campaign take top honors

FWP's magazine, *Montana Outdoors*, won first place in the Magazine category at the national Association for Conservation Information (ACI) 2021 awards competition. FWP also won for best agency website, best social media campaign, and best magazine article in the Cultural/Historical category.

The winning article, "From Warrior to Warrior," told the story of Chief Plenty Coups's role in the 1911 dedication of the Tomb of the Unknown Soldier.

Other *Montana Outdoors* articles receiving awards, announced at the ACI annual conference on July 28:

- **2nd place: Magazine Article: Fisheries,** for "Small River, Big Fish," a portrait of the Beaverhead River.
- **3rd place: Magazine Article: General Interest,** for "On the Prowl," on FWP's aquatic invasive species search crews.
- **3rd place: Magazine Article: Wildlife,** for "Tracking Wildlife's Ups and Downs," about how and why wildlife biologists track wildlife populations.

Formed in 1938, the ACI is a nonprofit organization of communicators working for state, federal, and private conservation agencies and organizations. ■

MONTANA STATE PARKS

Prescribed burn rejuvenates native grassland at Lone Pine State Park

In April 2022, fire crews with the Montana Department of Natural Resources and Conservation (DNRC) teamed up with FWP staff to conduct a prescribed burn at Lone Pine State Park in Kalispell. The aim was to rejuvenate the park's native grassland, specifically bunchgrass species such as rough fescue, Idaho fescue, and Montana's state grass, bluebunch wheatgrass.

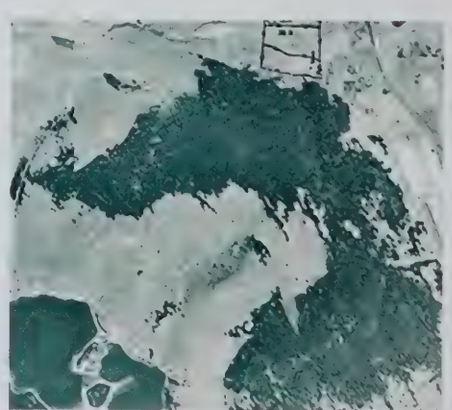
Without periodic fire disturbance, native bunchgrasses can become too thick for wildlife use, and the open areas get taken over by shrubs, trees, or noxious weeds.

While scorned by some hikers and hunters as "ankle turners," native bunchgrasses play an important ecological role. They supply a nutrient-rich food for deer and elk, while grassland birds and small mammals use them for nesting habitat and hiding cover.

But to provide benefits to wildlife, bunchgrasses must remain healthy—what plant ecologists call "vigorous." Periodic burns kill encroaching trees and shrubs, burn up thick, dead vegetation, add carbon to soil, and expose new growth to sunlight.

Setting fire to aging grasslands is increasingly difficult in places like Lone Pine and other urban parks along what's called the "wildland-urban interface." If not conducted under ideal conditions, prescribed fires can threaten nearby homes and forests.

But crews had perfect weather during the windless morning of April 7, as dew evaporated and trained DNRC staff carefully burned 7 acres of Kalispell's backyard state park. As planned, the conditions helped produce a slow-burning, low-intensity fire not hot enough to burn grass roots, which would kill the grasses, yet sufficient to clear out woody plants and dense, dry undergrowth. Within two or three years, the Lone Pine State Park grassland should be fully rejuvenated and regrown into its natural state. ■



A 1946 aerial photo of the Lone Pine area, with about 65 percent of the grassland (light) displaced by stands of Douglas-fir (dark), shows how the lack of fire leads to prairie loss.

CLOCKWISE FROM TOP LEFT: MIKE MORAN ILLUSTRATION; DILLON TABISH/FWP; FWP; SHUTTERSTOCK

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Westslope cutthroat trout

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WILD WEATHER

Recent floods devastate communities but spare most fish and wildlife

The North Entrance Road between Gardiner, Montana, and Mammoth in Yellowstone National Park was washed out during the June 13 flood.

A freakish set of climatic conditions combined to create floods that tore out bridges, ravaged roads, and smashed flow records on the Yellowstone and other south-central Montana rivers late this past spring.

During the weekend of June 11-12, several inches of rain—what one local meteorologist called a "high-elevation firehose"—drenched Gallatin, Park, Carbon, and Stillwater counties. The precipitation hit heavy mountain snowpack, created by an unseasonably cold spring. The rain rapidly melted the snow, and all that water rushed downhill, filling tributaries, then overwhelming mainstem rivers.

By Monday, flows were setting all-time records, especially in the Beartooth and Absaroka mountains. At Corwin Springs, near Yellowstone National Park's northern entrance, the Yellowstone River registered a record volume of 49,400 cubic feet per second, toppling the previous record of 32,200 cfs set in 1996 during what was called a "100-year flood event."

While wiping out roads and washing away U.S. Geological Survey flow monitors, the Stillwater River shattered its old record of 12,000 cfs with a torrent of 23,900 cfs.

The floods destroyed homes, businesses, and ranch buildings. Economic damage to the region could last for years.

Fortunately, fish and wildlife populations were relatively unharmed. "Most fish, especially adults, can handle heavy flows," says Eric Roberts, chief of FWP's Fish Management Bureau. "They find safer places behind boulders or in floodplain shallows when water levels rise." Roberts adds that floods improve aquatic habitat. "They clean silt out of gravel bars that will be prime spawning areas, and all those downed trees, debris, and even bridges provide good fish habitat and cover."

Large mammals and adult birds were able to walk or fly to higher ground, according to Brian Wakeling, chief of the FWP Game Management Bureau. "But no doubt the eggs and hatchlings of some ground-nesting birds were washed away, as were many small mammals, reptiles, and amphibians," Wakeling says. He adds that losses of individual animals "weren't at a scale likely to harm populations."

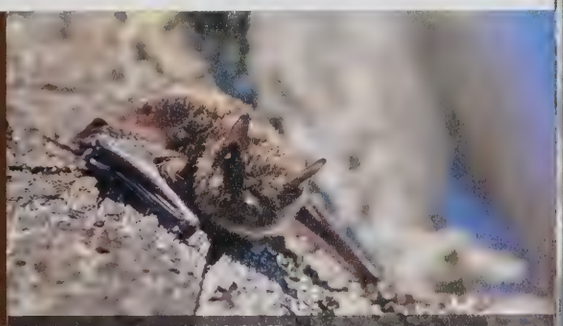
The floods should also help cottonwoods in the floodplains, because the trees need river silt to facilitate early seedling growth.

FWP officials say many fishing access sites are still closed on the Yellowstone, Stillwater, East Rosebud, and Rosebud rivers due to closed county roads or damaged bridges. But many others have since reopened after temporary closures following the flooding. ■

FROM TOP: KYLE STONE/NPS; SHUTTERSTOCK

WILDLIFE DISEASE

Azure Cave bats decline by 98%



Little brown bat (*Myotis lucifugus*)

Biologists conducting a spring survey of bats at Azure Cave in Phillips County were shocked to find a catastrophic decline from the previous year, likely due to white-nose syndrome (WNS).

Scientists with FWP, the Montana Natural Heritage Program, and the Bureau of Land Management (BLM) conducted their yearly bat survey in May. Azure Cave is a critical hibernating location for bats, hosting approximately 1,700 to 1,900 of the winged mammals in a typical year. Surveyors were stunned to find a 98 percent reduction in numbers, with only about 40 bats remaining in the cave. Half of those showed visible fungal growth associated with WNS. "We're assuming the rest died of the disease," says Kristina Smucker, chief of the FWP Nongame Wildlife Bureau.

WNS is a fungal disease that has killed more than 6 million bats in North America since 2006. It can wipe out entire bat colonies and has caused dramatic population declines for several North American species. The first confirmed case in Montana was found in 2021.

Located on BLM land in the Little Rocky Mountains southeast of Havre, Azure Cave previously was the largest known hibernating winter colony of the little brown bat (*Myotis lucifugus*) in the western states. The species has also suffered severe declines in the eastern and central regions of North America.

This is the third year in which the fungus has been present within Azure Cave.

Anyone who encounters dead bats or bat colonies should call the FWP Wildlife Health Lab in Bozeman at 406-577-7882. For more information on white-nose syndrome, visit whitenosesyndrome.org. ■

FWP VIDEO SHOWCASE

Recent videos produced by FWP staff for social media and television

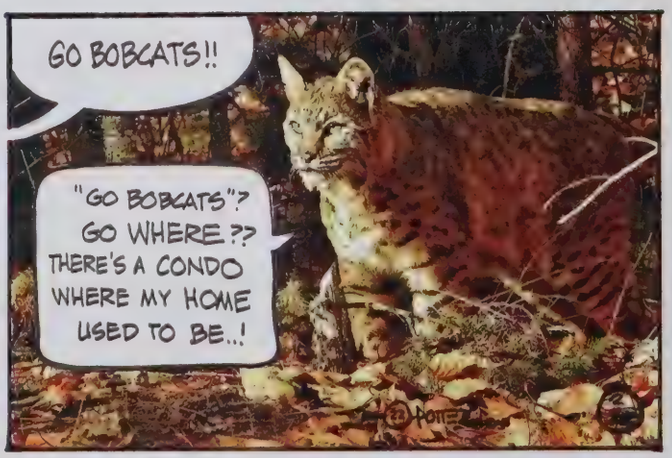
Bird Banding
See yellow warblers and other songbirds being banded with tiny aluminum bracelets, while FWP bird biologist Allison Begley explains how scientists use information from bands to help with bird conservation.

Wildlife Tracks, Part III
Corie Bowditch (née Rice), FWP Youth Education Program coordinator, hosts Part III of her series on learning to identify wildlife tracks. This episode: bear (black and grizzly), wolf, and mountain lion paw prints.

The Wonder of Whiskers
Corie Bowditch explains how whiskers help animals hunt, sense their surroundings, and even find their way around in the dark. And why a human moustache (especially a fake one) can't do any of that.

OUTDOORS JUST FOR KIDS

By Brett French. Illustration by John Potter



Just about anywhere you go in Montana—from shortgrass prairies to dense mountain forests—you could run into a bobcat. No, I don't mean someone who went to college at Montana State University, whose mascot is the Bobcat. I mean the actual wild cat, scientifically known as *Lynx rufus*.

Bobcats are very adaptable, so they are able to live in much of the United States and parts of western Canada and Mexico. For instance, bobcats are able to eat many different foods, including upland birds, mice, voles, rabbits, ground squirrels, deer fawns, and even porcupines. They may travel as far as 12 miles, often at night or in the early morning or late evening, to find food.

Bobcats are the smallest of Montana's three wild cat species (the other two are the lynx and the mountain lion). They weigh 15 to 35 pounds and are 28 to 37 inches from nose to tail tip, according to the Montana Natural Heritage Program. That's about twice as big as a house cat. People sometimes mistake bobcats for lynx. Both have short tails and ear tufts. But the lynx has longer ear tufts, almost no spotting, longer legs, and a shorter tail. It also lives only in the mountains of western Montana. Lynx fur is gray with faint spots, while bobcat fur has dark spots and can be gray, brown, and even reddish or yellowish. A bobcat also has much smaller feet than a lynx's massive paws.

Bobcats don't have many enemies, although mountain lions and coyotes will kill them. Trappers and hunters harvest bobcats for their fur. In areas where they are not trapped or hunted, bobcats may live to be 7 to 16 years old, on average, although one that was captured lived to be 32.

The MSU Bobcat is much older—more than 100 years old. The school chose the small, wild feline to be its mascot in 1916, back when it was known as the Agricultural College of the State of Montana. ■

Brett French is the outdoors editor at the Billings Gazette.
John Potter is an artist and illustrator in Red Lodge. See other "Outdoors Just for Kids" columns at billingsgazette.com.

Common burdock

Arctium minus

What it is

Burdock is a large-leafed invasive plant, often encountered along river trails, that produces round, brown, marble-size seed heads that stick in people's shoelaces or in their dog's furry underparts.

Where it's found

This hideous plant, which first arrived in North America from Europe in the 1600s, shows up throughout Montana in moist areas like stream and river banks, old fields, and woodland edges.

What it looks like

Burdock starts off as a large-leafed rosette that looks a lot like rhubarb. The second year, stalks grow 2 to 5 feet tall and sprout purple flowers that resemble thistles and bloom in late summer. Then the flowerheads dry and drop off, exposing large brown seed heads (burrs) covered in tiny, hooked, Velcro-like "bracts" that stick to almost anything.

Illustrations by Liz Bradford

Why we hate it

Burdock is a pain to remove from dog fur and human socks, shoelaces, and clothing. The burr heads break apart when pulled, leaving behind hundreds of individual bracts. They also create thick mats in sheep's wool, causing the animals to suffer and reducing the value of the wool. Birds and bats can also get trapped in the burr clusters and die.

How to get rid of it

Individual burdock can be killed by hand-pulling or digging out the deep taproot. Some herbicides work on the rosette stage. Mowing can control the spread when done before the plant flowers. Bozeman-based Sacajawea Audubon and other Audubon chapters hold burdock removal days to reduce harm to birds. ■

Learn more about noxious weed control at mtweed.org.

"Carrying capacity"

A quick look at a concept or term commonly used in fisheries, wildlife, or state parks management.

Two kinds of carrying capacities affect FWP decisions about wildlife management. *Biological* carrying capacity refers to the population size that a given habitat can sustainably support. This is determined by ecological factors such as available food, shelter, and water. Based on population surveys and other information, FWP wildlife managers estimate the biological carrying capacities for different game species in each hunting district.

Social carrying capacity is the population size of various species that people—landowners especially—will tolerate. Often this is far lower than the biological carrying capacity. For instance, much of western and central Montana could biologically support far more grizzly bears than exist today. But ranchers, homeowners, and others will accept having only so many grizzlies where they live.

The same is true with elk in many areas. The land may support lots of elk, but all those elk may cause depredation problems for landowners. That means the social carrying capacity may be far lower than the biological carrying capacity. ■

PAUL OJENEAU

At "capacity"? That depends on which definition you're using.

Don't Move CWD Around

How following Montana's big game carcass disposal regulations can help contain the disease

By Paul Queneau

The author, his two sons (far left and second to left), and a friend's son on a successful whitetail doe hunt.

For years I had a tradition of unknowingly breaking Montana's game-disposal law.

After harvesting a deer, I'd carefully follow state regulations by notching my tag and promptly attaching it to the carcass. Then I'd field dress the animal and pack it in pieces back to my truck.

Once home, I'd be left with a pile of bones after all the meat was butchered and tucked away in my freezer. Unbeknownst to me, that's when things went south, legally speaking. Rather than tossing the remains out with our trash, I felt drawn to deposit them in the nearby forest, where they could revert back to soil. Our local landfill seemed an unceremonious final resting place for animals I revere in life and seek to honor in death.

I've since learned that what I'd been doing was in fact illegal. And that the best way to honor a harvested big game animal is to take the carcass or parts to a local garbage disposal facility. Also known as Class II landfills, these operations bury refuse deep in the soil, which shields it from contact with wild deer.

Paul Queneau is an editor for Bugle, *the magazine of the Rocky Mountain Elk Foundation. He lives in Missoula.*

BROUGHT IN BY A HUNTER?

In 2017, Montana documented its first case of chronic wasting disease (CWD) in free-ranging wildlife after a mule deer buck south of Billings tested positive. This always-fatal brain disease can afflict deer, elk, and moose (but, as far as scientists can tell, not humans). Later that same year it cropped up along Montana's Hi-Line near the Canadian border, then a couple of years later near the Ruby River east of Dillon.

> The disease can persist in the ground for years and get picked up by deer, elk, or moose if the animals nose around contaminated soil or plants.

In 2019, CWD inexplicably leapt 300 miles across Montana's portion of the Continental Divide to the northwestern Montana town of Libby, where a whitetail doe tested positive inside city limits. Disease experts were stunned. Since then, more than 136 deer in the Libby area have tested positive for CWD, yet that outbreak remains isolated, hundreds of miles from any other positive detection.

The big question: How did CWD get there?

According to Dr. Emily Almberg, a disease ecologist with Montana Fish, Wildlife & Parks, it's likely that no one will ever know for certain how the Libby outbreak started. One possibility is that an infected deer made a long-distance trip; another is that a hunter

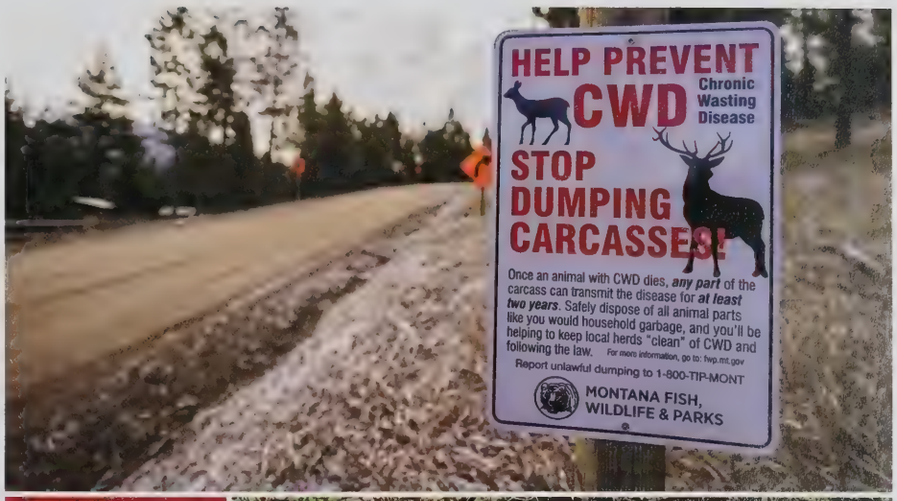
P.J. DELHOMME

brought CWD there in a deer harvested elsewhere. The disease could have been inadvertently turned loose when the infected carcass was dumped in the woods. "We always worry about that scenario," says Almberg, who works at the FWP wildlife health lab in Bozeman.

Look around the outskirts of any Montana town and you'll find the "boneyards" where generations of hunters have dumped the remains of deer, elk, and other harvested game. What many don't realize is that this illegal carcass disposal creates a disease "vector."

"CWD isn't anything like your typical bacteria or virus," says Austin Wieseler, FWP wildlife health biologist. "It's spread by prions—super-hardy misfolded proteins that remain infectious in the environment for at least two years and likely even longer."

Live animals with CWD can shed infected prions through feces, saliva, and urine, but the prions also remain infectious in the tissues of dead animals. Prions bind to a variety of surfaces, minerals, and soil types, making CWD diabolically hard to eradicate. The disease can persist in the ground for years and get picked up by deer, elk, or moose if the animals nose around contaminated soil or plants.


HELP PREVENT
CWD
Chronic Wasting Disease
STOP DUMPING CARCASSES!
Once an animal with CWD dies, any part of the carcass can transmit the disease for at least two years. Safely dispose of all animal parts like you would household garbage, and you'll be helping to keep local herds "clean" of CWD and following the law. For more information, go to: fwp.mt.gov
Report unlawful dumping to 1-800-TIP-MONT
MONTANA FISH, WILDLIFE & PARKS

WARNING SIGNS
To reduce the risk of CWD ending up in soil and plants, where other animals could contract the disease, FWP has increasingly been posting signs near "boneyards" on the outskirts of towns where hunters commonly—and illegally—dump the remains of their deer, elk, or moose.

PAUL QUENEAU, PAUL QUENEAU

PLUS, IT'S ILLEGAL

Many hunters hunt far from home, sometimes traveling hundreds of miles within Montana (or to other states) to pursue deer, elk, or moose before returning home with a harvested animal. "If you don't realize it is CWD positive, and then discard the carcass back home where other big game animals can readily come into contact with it, you are increasing the risk factor for transmitting CWD to where you live," says Morgan Jacobsen, FWP regional Communication and Education Program manager.

If that isn't reason enough, it's also illegal under Montana state statutes to place any animal remains on public land not directly at the kill site. Violators are subject to a $500 fine and a loss of hunting and fishing privileges for a court-determined length of time. "Those off-limits areas also include fishing access sites, trailheads, wildlife management areas, all bodies of water, and road rights-of-way," Wieseler says.

In recent years, FWP has begun posting signs in common dumping areas to remind hunters about the dangers of spreading CWD if they dump deer, elk, or moose carcasses or parts there. The rules are also listed on page 4 of the department's 2022 deer, elk, and antelope regulations booklet.

In addition, FWP now requires that all of the head or skull (containing brain material, the spinal column, or both) of deer, elk, or moose harvested in Montana must be left in the field at the kill site or, if transported for further processing (including taxidermy or meat processing), be disposed of in a Class II landfill once that processing is complete.

The regulations also prevent people from creating ugly piles of bloody bones next to trailheads and river accesses. That degrades the public image of hunters while attracting bears and other scavenging predators to places where people live and recreate.

"The best way to dispose of any big game animal remains is also the easiest way: Just bag it up in heavy-duty trash bags like the ones made for yard waste and send it out with your household garbage, if permitted by your local waste disposal regulations," Jacobsen says.

For people in rural locations without trash pickup, FWP has a map of Class II landfills across the state on its website (fwp.mt.gov/cwd) as well as designated drop-off dumpsters where hunters may safely and legally dispose of carcasses.

"I understand that carcass disposal can be a challenge. I grew up in the country, and we burned almost all of our trash and spread the ashes across our pastures," Wieseler says. "But you'd be amazed at how tough CWD is to kill. You have to get temperatures unbelievably hot to actually destroy the prion. So your best bet is to just take the time to ensure it gets buried in a proper landfill."

WHO'S THERE? A northwestern Montana whitetail buck senses an intruder as it moves across a mountain range. Whitetails are generally warier than mule deer and in many cases more difficult to hunt.

WHAT ABOUT WHITETAILS?

They may not attract as much attention as elk, bighorn sheep, and mule deer, but as they've steadily spread across Montana, white-tailed deer have become a Treasure State mainstay.

BY ANDREW McKEAN

Over the three decades that I've hunted white-tailed deer in northeastern Montana's Milk River Valley, I've come to think of these mercurial big game animals as sharing many of the properties of water. These deer flow along paths of least resistance, sometimes inundating the landscape, other times becoming conspicuously, desperately absent.

Just as in times of drought and flooding, we tend to notice whitetails mainly when they're at one extreme or the other. In years of abundance, you'll see large herds in every riverside alfalfa field, and a distressing number on the shoulders of our roads, some struck by vehicles, other at risk of it. In times of decline, like after the deadly 2011 EHD (epizootic hemorrhagic disease) outbreak along the Milk River that killed 90 percent of the deer in that area, whitetails were so scarce that one farmer friend would announce sightings of even a single survivor.

The idea of whitetails being special and rare is one that Montanans of an earlier generation would recognize. For much of the last century, at least in eastern Montana, whitetails were pushed to the wild margins by the sweep of settlement, as people cleared, leveled, and then irrigated river valleys and fenced the prairie. In those days, if you wanted to hunt a Montana whitetail, you went west, to the mountain forests where wary deer could be caught coming out of the doghair tangles of grown-over clear-cuts at dawn or dusk. Or maybe you hunted them in the upper benches of the few wildlife management areas the nascent Montana Fish and Game Department established in the foothills.

The return of whitetails to our farms, parks, and even towns—made possible largely with science-based hunting seasons and regulations and habitat conservation—is one of those wildlife restoration success stories that hunters and biologists like to tell each other. We share less frequently the reality that, in many places, whitetails have grown so numerous as to become garden- and crop-destroying pests. "River rats," that same Milk River farmer calls them when populations bounce back, which they inevitably do.

Abundance and depletion are the nature of both water and whitetails. Graphs of Montana's whitetail populations in some regions over the last few decades resemble

EBB AND FLOW White-tailed deer populations experience high highs and low lows, influenced largely by winter weather, drought, and other factors beyond the control of wildlife managers.

the seasonal hydrograph of a snowmelt stream (or the stock market), with steep peaks descending into low valleys. Wildlife managers, who like to see population graphs depicting gentle stair-stepping rises, admit the challenge of managing a species that responds less to hunting regulation changes and habitat manipulation and more to the increasingly unpredictable variations of weather and climate. Just like water.

That's the big picture of Montana's whitetails. But, as anyone who hunts them knows, the small picture is rich in tiny, significant details, defined by seeps and rivulets (to keep a metaphor alive). Which way is the wind blowing? Will breeding season lure a nocturnal buck into the daylight? When spooked, will whitetails come my way or race off onto the neighbor's place? Will that buck I've seen for two seasons be around for a third?

Those two stories—the large-scale population trends and the personal-sized pursuit of this twitchy trophy—are both required to understand why white-tailed deer are Montana's most variable big game animal.

BOUNDING BACK

White-tailed deer are native to much of the state. We find evidence in Native American artifacts, and we know that the only time Lewis and Clark's journals mention these animals by name was when the expedition camped for days at the mouth of the Marias River near modern-day Loma. The captains deviated from their usual description of "red" or "fallow" deer to write about seeing "great numbers of elk and white tale deer" on the lower Teton River.

And we know that whitetails largely disappeared from great swaths of the state as people cleared and settled the land and overharvested the wild ungulates for home or market consumption.

Vastly more interesting, at least to me as a hunter, is how whitetails have responded to modern land practices, and bounded back from depletion to now occupy the entire state, from the chokecherry draws and lentil fields of northeastern Montana to the towering Bitterroot Range on the Idaho border. Agricultural changes—from the expansion of corn into the northern plains to whole townships planted to soil-holding CRP grasses in the 1990s—have boosted local whitetail populations. Equally fascinating is tracking how their fluid populations follow meteorological events.

"In northwestern Montana, weather drives our whitetail populations more than any other factor," says Neil Anderson, Montana Fish, Wildlife & Parks regional wildlife manager in Kalispell, who refers to a widely cited 2006 study of whitetails in the Salish Mountains west of Kalispell. Researchers documented greater population declines, caused mainly by poor fawn survival, the longer that temperatures stayed below 10 degrees. Heavy snowfall, particularly when it stays on the landscape into March and April, is particularly brutal on deer and especially fawns, says Anderson.

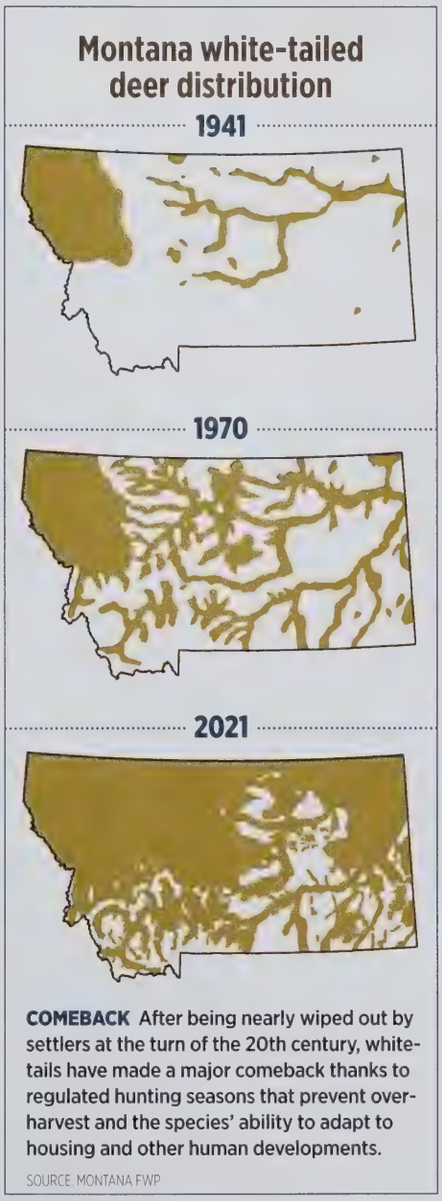
To escape the snow of the high country and find what biologists call the "thermal cover" of low-elevation timber, northwestern Montana's whitetails commonly travel as far as 30 miles to winter range, adds Anderson. One study documented deer trudging 44 miles each way between Seeley Lake and winter habitat in the Goat and Squeezer creeks area.

"They really move during the tough winters, typically into the lower third of a mountainous area," says Anderson. "Interestingly, they don't travel all the way to the bottom of a river corridor, because that's where the coldest air settles. Instead, they find a little band of thermal cover on lower benches where trees shed snow and block wind and it can be a few degrees warmer than at both higher and lower elevations."

Those winter ranges can be so important to survival that whitetails will funnel in by the hundreds from surrounding mountain ranges. In one section of low-elevation timberland west of Kalispell, winter deer use is so intense that the herds graze planted Douglas-fir seedlings to the ground, along with most other vegetation. To Anderson, that's a grim indication the region needs to conserve denser conifer stands of core winter habitat to support the region's whitetail population.

WINTER WEATHER

Whitetail trends track closely with severe winter weather across most of the species' northern range, but the correlation is especially consistent in the western mountains. In FWP's Region 1 (northwestern Montana), which has by far the state's largest whitetail population (and lowest mule deer population), the whitetail herd peaked in 1996, producing a regional harvest of 18,028 whitetails. But following the snowy, brutally cold winter of 1996-97, the harvest plummeted to just 5,845 for the 1997 season, reflecting a population decline. Since



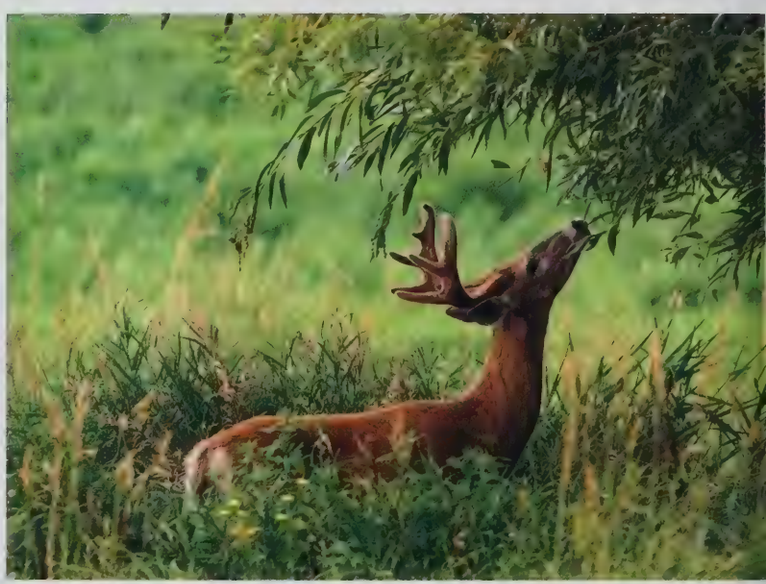
COMEBACK After being nearly wiped out by settlers at the turn of the 20th century, whitetails have made a major comeback thanks to regulated hunting seasons that prevent overharvest and the species' ability to adapt to housing and other human developments.

SOURCE: MONTANA FWP

Andrew McKean, hunting editor of Outdoor Life, *lives on a ranch with his family near Glasgow.*

STEVEN AKRE

AT HOME ABOUT ANYWHERE Today white-tailed deer thrive in a wide range of habitats, including (clockwise from above) canola and other agricultural crops, riparian areas, conifer forests, irrigated hay fields, and prairies dominated by taller grasses and forbs. Like coyotes and Canada geese, whitetails also prosper in many human-altered landscapes, including rural subdevelopments, leafy urban suburbs, golf course complexes, and recreation areas.



then, Region 1 deer numbers have climbed again in 2006 and 2016, followed by declines after harsh winters.

Montana wildlife officials note that whitetail populations don't stay down for long. Along with favorable weather, they're especially responsive to habitat changes, thriving in the disturbed edges of housing developments and in the thick brush that follows large-scale logging operations by a few years. Like coyotes and Canada geese, whitetails often thrive in developed landscapes.

"When that increase starts, populations can grow pretty quickly if the winters stay mild."

"Once you start getting more fawns surviving and recruiting into the population, after two or three years, when those deer start reaching reproductive age, you see a sharp population upswing," Anderson says. "When that increase starts, populations can grow pretty quickly if the winters stay mild."

Numbers of older, large-antlered buck numbers also start growing, though not at the same rate as the general population due to the physiological stress of the rut and mortality from hunter harvest.

Population elasticity is also the story of Montana's statewide whitetail population, which has averaged about 200,000 for the past two decades. Within that time frame, it's climbed as high as 265,000 and dropped as low as 170,000, says Brian Wakeling, FWP's Game Management Bureau chief. In times of abundance, FWP issues more antlerless tags, then scales them back when populations dip. In FWP's Region 6 (northeastern Montana), where I live, the antlerless harvest has ranged from about 3,000 (in 2009, just before the killer winter of 2011-12) to under 100 during the 2012 season. That's in a regional herd that in the last decade has been as high as 15,000 whitetails and as low as 6,000.

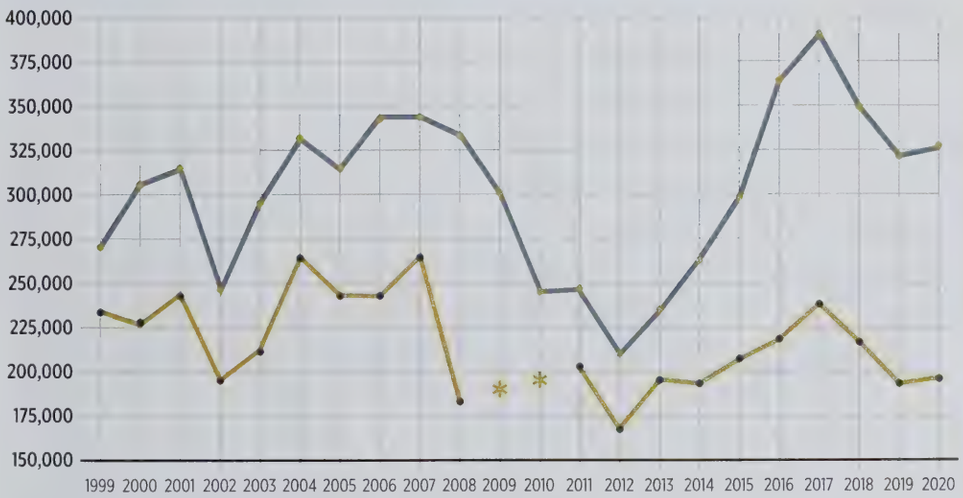
Montana's statewide mule deer numbers have followed roughly the same path as the whitetail population over the past 20 years, Wakeling says. Numbers dropped in 2002, rebounded, dropped again to bottom out following the severe winter of 2010-11, then began rising again. Montana's statewide mule deer population has grown from about 270,000 in 1999 to an estimated 328,000 in 2020 (after reaching nearly 400,000 in 2017). Though statewide numbers (and certainly local abundance) fluctuate, conditions have been more favorable for mule deer than most people may believe. Those similar trend lines defy a frequently cited theory that whitetails outcompete mule deer in their shared habitats.

SICK TO DEATH

In addition to winter weather and habitat abundance, another whitetail population driver is disease. Especially in eastern Montana, where high whitetail densities can accelerate infection rates, local herds have nearly been wiped out by EHD. The virus is spread by biting midges, notoriously troublesome late in hot, dry summers that follow wet springs, says Melissa Foster, FWP wildlife biologist for the lower Yellowstone River region. "We have EHD outbreaks in our neck of the woods every year," she says. "Some are small and localized, and others are widespread and kill off a greater proportion of deer."

An epidemic in southeastern Montana's

Statewide white-tailed and mule deer estimated* population 1999-2020



* Derived from models using fawn:doe and buck:doe ratios and buck harvest. SOURCE: MONTANA FWP

Contrary to widespread belief, white-tailed deer in most areas are not displacing mule deer. The populations of both species have risen and fallen in tandem over the past 20 years.

White-tailed deer
Mule deer
* *Data not available*

CLOCKWISE FROM TOP LEFT NICK FLICCI, STEVE M. MORRAN, KERRY NICKOU, BILL KINNEY, BILL KINNEY, BILL KINNEY

Carter County last year spread from creek valleys near Ekalaka to the timbered highlands of the Long Pines, killing unknown hundreds of whitetails in just a few weeks last August. "It's terrible to lose that many animals so quickly—and right before hunting season," says Foster.

But despite high mortality in Carter County, the wildlife biologist suspects that whitetail numbers will bounce back in just a few years. That was the case with crippling EHD epidemics on the Milk, Musselshell, and lower Yellowstone rivers over the past decade.

"It's terrible to lose that many animals so quickly."

More worrisome is the slower-moving but more permanent risk of chronic wasting disease (CWD) affecting Montana's whitetails *and* mule deer. CWD is an always-fatal neurological deer disease that's been detected along Montana's Hi-Line, south-central counties, and the Libby and Ruby River areas. Once it infects the animals and soil of an area, it's impossible to eliminate. While only a few positive cases have been found in FWP's Region 7 (southeastern Montana), where Foster works, she acknowledges that FWP has not received many samples from the area. "It would not surprise me if it's out there on the landscape," she says of CWD on the lower Yellowstone. "It's in counties all around us, so we can assume it's just a matter of time before we find it here."

FIELD PERSPECTIVE

Because Montana's general deer license allows for either species of deer, hunters often respond to opportunity. I'm no different than a lot of mule deer hunters, who won't pass up an unanticipated buck even if it sports a white tail.

Hunting whitetails can be as variable as the deer themselves. You might encounter them close in a prairie coulee while you're stalking a mule deer, or bounding across a distant wheat stubble field, their signature tail waving bye-bye. You might sit all day in a treestand on an edge of an alfalfa field or forest clearing, waiting for whitetails to move from cover to feed. Maybe you crash two shed antlers together—"rattling"—during the rut to call in a buck looking to fight a rival. Maybe you track a deer through fresh snow, using tall timber to hide your pursuit.

Some of us hold out for a thick-antlered mature buck. Others kill whitetail does for their mild meat. In years when the Milk River's whitetails are more visible and numerous than rabbits, my farmer friend practically begs hunters to come shoot whitetails and fill their freezers with lean roasts and tender steaks. Some of us arrive with bows, others with rifles, and now that Montana has a traditional muzzleloader season, you can expect more whitetails will be killed with flintlocks and percussion blackpowder firearms.

Several years ago, when manicured deer food plots were all the rage in the Midwest, I tried my hand at intensive whitetail land management on some property along the Milk River near Glasgow (legal in Montana when done in accordance with state statutes). I tilled the weedy edge of an irrigated alfalfa field and broadcast seeds of beets, hardy strains of turnips, and fast-growing winter rye. I raked the seeds into the gumbo, making sure my little food plot got water along with the paying crops, and ordered a few treestands and trail cameras. I couldn't wait for archery season, when I'd arrow a wallhanger whitetail in my little deer garden.

When September arrived, my cameras showed deer stepping right over the leafy turnips and red-blushed beets to gorge on alfalfa that had been there all the while. It was a reminder that, when it comes to eastern Montana at least, whitetails go their own way. Just like water.

NOT A BAD CONSOLATION PRIZE Many hunters prefer mulies over whitetails, mainly due to the big-eared deer's larger body and antler size. But bringing a whitetail buck home is always an achievement, especially considering the species' elusive nature.

CLOCKWISE FROM TOP LEFT: ALEXIS BONOGOFSKY; STEVE OEHLENSCHLAGER; TOM DICKSON

OFF AND RUNNING While a spooked mule deer will usually trot off a ways then stop to look back at the intruder—often offering hunters a clear side shot—whitetails take off and don't stop running until they're in the next county.

The Curious Case *of* Wolf 57

In December 2021, FWP wildlife biologist Wendy Cole received a tattered radio collar covered in moss and shrouded in mystery. Solving the puzzle ended up shedding further light on the impressive movements of wildlife.

BY DILLON TABISH. PHOTOS BY HUNTER D'ANTUONO

On a quiet Friday afternoon shortly before Christmas 2021, Wendy Cole received an unexpected gift.

The Montana Fish, Wildlife & Parks wolf specialist was finishing work before the holiday break when a man came into her Kalispell office and handed her a tattered, cloth-covered collar. He said he had been walking through the forest west of town, near Little Bitterroot Lake, when he stumbled upon it in the brush, partially blanketed in snow and green moss. He looked around for other clues but found nothing.

Cole recognized it as a wildlife-tracking collar. But it was an old VHF (very high frequency) model that biologists hadn't used for years. The only clues to what the radio collar was doing in the woods were a serial number, a telephone number, and the words "Parks Canada Banff, AB" printed on the side.

Cole wondered if the man had found the collar of a wolf that had wandered south from Canada. "I told him that we occasionally get wolves repopulating here from north of the border," Cole recalls. "That's how we initially got wolves restarting down here in northwestern Montana in the 1970s and '80s.

The wolf specialist spent the next few weeks trying to figure out if her hunch was correct. She talked to staff with Parks Canada and found a wildlife biologist who was equally intrigued by the mysterious collar. He started doing some digging.

It turned out that in 2001, Canadian biologists had fitted the VHF collar on "Wolf 57," a young female with the Fairholme Pack in Banff National Park. The researchers were looking to track the pack locally, but many of the collars also helped them better understand how long-distance travel by individual wolves can improve the genetic health of populations. When wolves mate with others in distant packs, they make populations more genetically diverse and better able to withstand disease or other afflictions.

For decades, biologists in Montana and Canada have used VHF and, in recent years, GPS collars to learn where wolves travel, what habitats they use, the size of their home ranges, and other important information needed for management and conservation.

But none of that information is transmitted if a collar disappears.

In July 2003, Canadian biologists had tracked Wolf 57 into the Lake Minnewanka area of the Bow Valley west of Calgary, Alberta. But then it dropped off the radar.

GENETICALLY ROBUST

The landscape between Banff National Park and Kalispell, 300 miles south, is big, wild country. The jagged, ice-capped peaks of the Canadian Rockies reach up to 12,000 feet. Between the mountains are human-built hazards of highways, cattle ranches, and housing developments. It would be a long, difficult journey for any animal.

Somehow Wolf 57 found a way.

"This collar is a good indicator of movement corridors within vast areas of habitat that large carnivores can use to travel great distances," Cole says. "It shows that wolves can make use of disjointed habitat patches even hundreds of miles from each other, which can make populations more genetically robust."

The journey isn't the longest documented for a Canadian or Montana wolf.

Dillon Tabish is the FWP regional Communication and Education Program manager in Kalispell. Hunter D'Antuono is a photojournalist based in Kalispell.

FWP wolf specialist Wendy Cole with the VHF wolf tracking collar found 300 miles south of where it originated.

In 2014, FWP wolf specialists tracked one wolf from Montana's Ninemile Valley roughly 900 miles north to Fort St. John, about 500 miles northwest of Banff, before it was killed on the TransCanada Highway.

After taking one last look at the 20-year-old collar discovered near Kalispell, Cole mailed it back north, a late Christmas gift for her Canadian colleagues.

Today, she notes that while some of the Wolf 57 mystery has been solved, there are still many unanswered questions: "How did it die? What route did it take to get here? Did it join or start a pack with other wolves once it was in Montana and contribute to the population before it died? There's still a lot we don't know."

What she and other wildlife experts do know is that protecting and conserving land to provide connectivity for wide-ranging species like wolves is essential for long-term survival.

WILDLIFE CORRIDOR? This map shows the route of another Canadian wolf, WM2001, carrying a GPS collar that transmitted its location from Banff National Park in western Alberta south through British Columbia to northwestern Montana. Biologists tracked the two-year-old male from February 2021 until it was legally shot and killed by a hunter in March 2021. This may have been similar to the route taken by the mysterious Wolf 57.

"Wolves instinctually need to disperse, and the protected public lands and well-managed private holdings in northwestern Montana and southern Alberta allow that to happen," Cole says.

The route of another Canadian wolf in early 2021 (see map at left) shows the possible route that Wolf 57 may have taken to reach Montana.

When Cole gives talks to people interested in wolves and other wildlife, she now includes the story of Wolf 57 and its impressive travels. There's always something new to learn.

"Sometimes when we think there is a dead end of information, we can still discover more information many years later," she says. "Parks Canada was wondering for years what happened to that wolf, and we were able to solve at least part of that mystery—that somehow it ended up right here, 300 miles away, near Kalispell, Montana."

My Seasons with Bear

The author reflects on the time he spent afield, and at home, with the greatest hunting friend he's ever had.

By Hal Herring. Illustrations by Stan Fellows

Every hunter who has ever trained and loved a dog has a story. If that dog lives to be old and gray faced, stove-up from heroic efforts and mishaps afield, groaning on a bed by the woodstove, feet twitching in dreams of long-gone birds and battles and glory, that is one kind of story. If your dog dies, violently, needlessly, at the height of his powers, the sun-lit days of wind and prairie and swamp still unfolding, that is another kind of story, indeed.

AUTUMN

In the early 1990s, with a carefully timed phone call, you could be first in line to reserve a day on the Teller Wildlife Refuge, a 5-mile stretch of bottomland along the east bank of the Bitterroot River. The Teller was thriving, a landscape conserved and more powerfully alive than ever—a patchwork of hayfields and other cropland, dense hedgerows of wild rose, chokecherry, and hawthorn rustling with pheasants, dark-water cattail marshes and ether-clear spring creeks snaking through, all of it easing only slightly downhill to the big cottonwood forest that shelters the braids and oxbows of the Bitterroot River itself.

My Labrador, Bear, was 13 months old. I remember him on his first day afield as a cannonball brush-buster—45 pounds, pure black, utterly fearless in the water. The Teller refuge trip was also my first hunt with a retriever that I'd trained. We were not set up at first light; I'd never been there and needed a little daylight to get the lay of the place. Bear bounded, came back, bounded, came back, walked to heel, serious, sober. I carried a pillowcase stuffed with four mallard decoys. We crossed open fields to a bend in a spring creek, where a patch of cattails offered the only cover. As I threw out the dekes, we could already hear the wild voices of Canadas flying in lines above the river. A flock of teal whirled, and mallards passed over fast, the jet noises of their bodies cutting cold air. Three drake mallards came in hard to the decoys, wings cupped, straight out of the northwest. I poleaxed the drake on the far right, leaned back, turned, fired my second shot foolishly behind the other two, then, adding more foolishness yet, racked the slide and fired another round as they disappeared against the bottomland trees, too far away. Waterfowl hunting—and this is as true for me now as it was then—is so intense that I frequently have to stop and remind myself to settle, to enjoy, to still my raging pulse and blabbering, often cursing, mind.

Bear emerged from the water with the beautiful drake clamped in his jaws. His clear pale eyes locked on mine, and he walked up to my leg and sat down, still holding the duck, looking out over the water. I took the bird from him, hugged him, let him shake beside me, and stopped him from grabbing the bird again before we tucked back into the cattails.

By 9 a.m., we had limited out with three drakes—each bird a perfect retrieve. I picked up the decoys, and we took them and the ducks back to the truck then went out to walk the spring creeks, jumping a few Wilson's snipe, Bear working close, flushing the small, pudgy shorebirds. He'd never seen them before, and he retrieved the two I killed with a little less fervor than he had the drakes; like mourning doves, their feathers slip and stick to tongue and palate. I put them in my jacket pocket and we walked to the river as the day warmed and gray clouds gathered. Autumn in the Bitterroots—the smell of apples from the orchards on every wind, big brown trout like bars of light bronze hovering over the sand and gravel in almost every little tributary of the Bitterroot.

Hal Herring is a writer in Augusta. Stan Fellows is an artist based in Colorado. A version of this essay originally appeared in Field & Stream. *Used with permission.*

WINTER

Back then, my wife and I lived on an old mule ranch high on the east side of the valley, with the freedom of the Calf Creek Game Range out the back door. The old house with asbestos siding and bad plumbing had a collapsing woodstove that devoured lodgepole pine logs like an insatiable deity yet offered little heat in return. We took care of the mules in exchange for rent since we seldom had money. Behind our home was another, more dilapidated house, occupied by a succession of squatters, adventurers, and families in transition. There was a lot of that in the Bitterroot at that time—Americans on the move from California and Georgia and points between, restlessly looking for a frontier.

One of those drifter families had come in with a litter of Lab puppies, stayed in the house through December while they sold as many as they could, and then took the cash and disappeared. They left one pup behind, in an old steel building on the ranch. I found him there, hidden behind some old buckets of hydraulic fluid. He'd rampaged the place, knocking over a full-size oxy-acetylene rig, tearing up a blanket they'd left for him. His shyness—or more likely shock from being alone—lasted a few minutes, before he began wiggling and leaping at my pac-boots. My wife and I invited him to our house for Christmas.

Mid-mornings that winter, Bear and I would walk across the ranch yard to a vast and abandoned white barn. Shotgun in hand, I'd toss a rock onto the roof and listen as the pigeons startled from the rafters inside. I'd command Bear to heel, and then to sit. Within a few seconds, the pigeons would start hurtling from the ventilation door above us. If my shooting was good, the birds would fall downhill, into a coulee, and I'd release Bear for the retrieve. We did this several times a week. We were driven, intense, with few distractions. That spring, we worked the pigeons or I threw the dummy on the now-thawed sloughs along the river, or we went into the mountains to flush blue grouse.

SUMMER

Bear lived with me in my timber-thinning camps in the summer, and after perceiving the real danger of a man with a raging Husqvarna 262, felling tree after tree, each falling willy-nilly and with sometimes lethal force, Bear opted to disappear into the forest while I worked. Whenever the saw shut down for refueling, he immediately appeared, tail wagging, tongue lolling. We'd play fetch or wrestle, share a drink of water or a bite of deer jerky, then I'd go back to work. In the evening as we hiked back to camp along my cutline, I'd find his beds, clawed out in the duff, in the shade of red fir, as he'd followed me, all day, from a safe distance.

Once in your hunting life, if you have time, because that is what it takes, you should train a dog, become immersed in the psyche and soul of another animal for whom you are 100 percent responsible, and whose senses, and sense of the world, are so beyond your own that every moment of every day is a process of revelation.

FALL

It is difficult, all these years later, to recall just how free we were, that dog and I. Children were not yet born, parents were still alive and well, even the idea of paying for houses and acreage with steady jobs was as yet undreamed. September is the opening act of a hunter's year in Montana, the start of upland bird season for grouse and Hungarian partridge, with sometimes enough doves and snipe around to vary the bag even more. Elk and deer are still weeks off, and pheasant, waterfowl, and antelope seasons don't open until October. There is a glorious freedom in simply chasing birds. And Bear and I took every advantage of it.

Each trip to cut firewood in the Bitterroot National Forest included a couple of hours of hunting blue grouse or busting the dense thickets of willow and birch along mountain seeps and bogs for ruffed grouse. I head-shot snowshoe hares, and Bear retrieved them with the same grace he did with birds. We came home exhausted, loaded with firewood for the winter, bearing some of the finest game meat on this Earth, and sat together on the porch to watch the sun fading over the mighty blue yawn of the Bitterroot Range.

On weekends, we went east to hunt the prairies, lost for long hours in coulees thick with wild rose and snowberry, breaching walls of chokecherry, serviceberry, and wild currants until we found sharptails, the ultimate natives, busting from cover in heart-stopping flushes. Often, I'd shoot and miss, but I connected often enough to keep my dog's faith in me strong, and keep him doing what he was, more than any dog I have owned or even known since, born for. At night, we'd make a simple camp somewhere on public land, and Bear would sleep curled against my sleeping bag, comatose, only to wake me later with his wind-milling legs, closed-mouth barks and whines, and muscles tensing and untensing as he hunted, endlessly, in the country of dreams.

Looking back, I can only be so very grateful that we hunted so hard the fall of his third year. As I write this, memories tumble forth like photos stored in an old shoebox: Bear plunging through the ice on Freezeout Lake and fighting his way back to me, before I learned never to shoot ducks that would soar, dead, on a tailwind out over that beautiful death trap of a lake.... December pheasants running in the wheat stubble, Bear closing on them, moving low to the ground, a small musclebound lion, flushing them into the wind where they hung for a millisecond like zeppelins, then turned to rocket-ride that wind at velocities so great as to defy my conventional concepts of how far to lead a bird.... Sharptails in a bog, thin ice and water over my boots, grizzly scat bright orange with buffalo berry piled in the narrow passageways, and my dog, busting brush, the sound of birds flushing all around us, a moment of extreme luck as a small covey flew in a perfect crossing shot through an opening, the lead bird tumbling in a burst of feathers as I fired, the retrieve. It's a forever image, portrait for the ages, frost-reddened and -yellowed willows, dark ragged spruce against a flawless cold blue sky, the sharptail's mahoganies and whites, the iridescent blue-black head and pale eyes of the greatest friend I had ever had....

SPRING

In 1992, the Bitterroot Valley was changing all around us, the beginning of the land-development boom that would transform the valley during our years there. Our house was at the end of the road, but an older gentleman, a retired excavator, had bought a small piece of land in the sagebrush hills behind us and was planning to build his home there. Every morning, he drove slowly by our house, mindful of the dust, pulling a trailer with a backhoe on it. In the cab of his truck rode his Airedale, tall and proud. They were inseparable.

One cold day in March, I let Bear out while I put on my boots. We were going to go up Butterfly Creek in the Sapphires, just east of our house, to get up to the snowline and see what we could find. I looked out the window and saw the excavator's truck and trailer with the backhoe parked on the road in front of our house. The man, wearing a faded Carhartt jacket, clean work clothes, and a cowboy's wild rag at his throat, was standing at our gate. I came out the front door.

"I ran over your dog," he said.

I looked at him, looked around. "No," I said. "Not my dog. He's right around here somewhere. I just let him out."

"No," the man said. He had tears in his eyes. "It is your dog. I know him. I ran over him."

Out in the road, Bear lay on his side, a crumpled black pile of rags. Not just dead, absent. He had run out in the road—something that, as far as I knew, he'd never done before—and been barking at the Airedale. He'd gotten between the truck and the trailer, and the trailer with the backhoe had run clean over him.

"What can I do?" the man asked. "How can I help you?"

I said there was nothing to be done. The man must have thought that I was crazy, or the coldest person he'd ever met. The truth was I had no capacity to understand what was happening. I picked Bear up by the scruff of his neck, and he hung limply from my hand. I walked over to our fence and threw him over it into the yard.

"I don't hold it against you," I said. "But I have to go now."

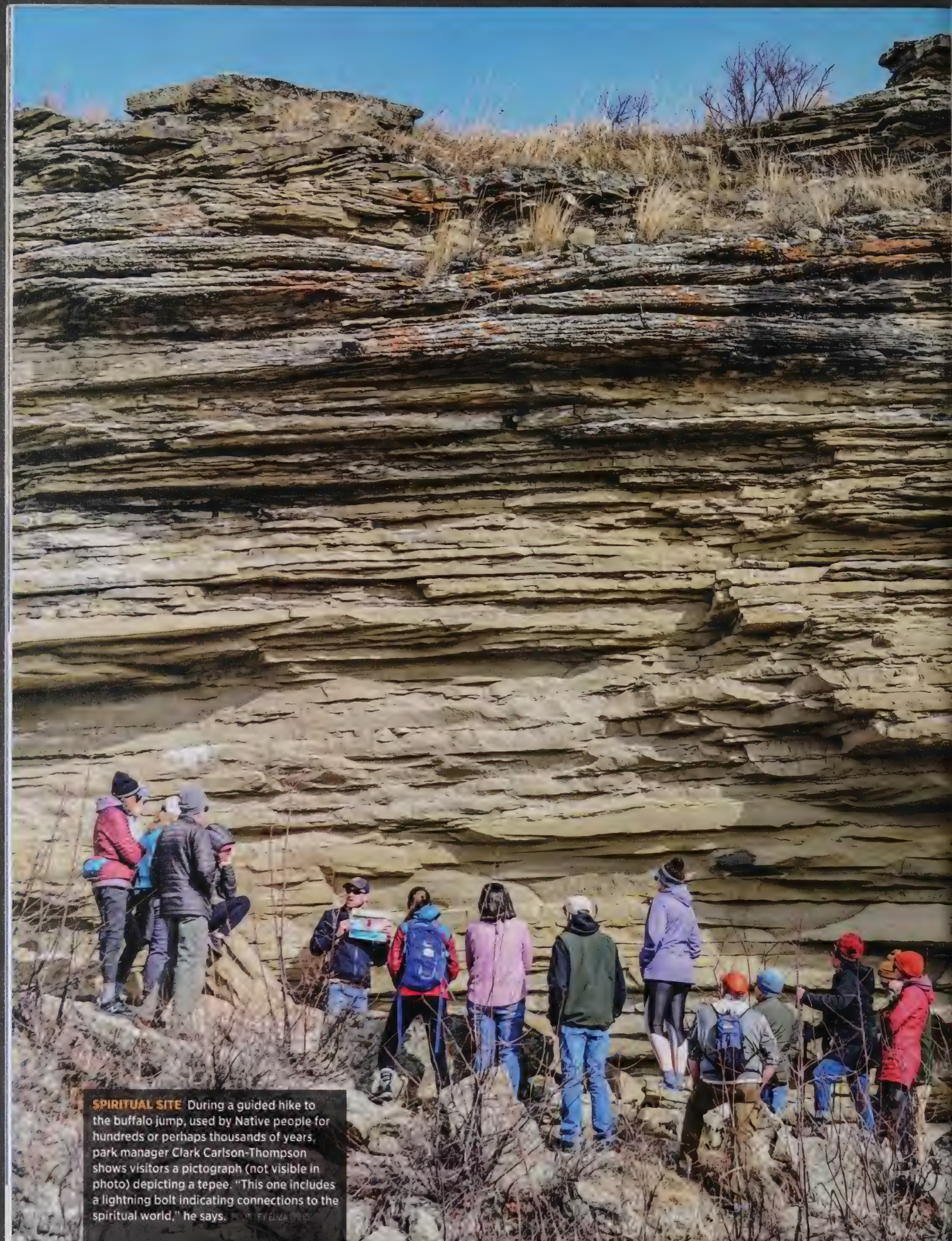
I don't know what happened next. I went back into the silent house. My wife was at work at a plant nursery a few miles away. There were no cell phones. There was nothing to say, anyway. I'd messed up and gotten our dog killed. There was the dog bed my parents had bought Bear for Christmas. There were his toys, his training dummy, the cloth duck that he carried around, a rubber Kong ball. There was his food dish and water bowl.

For three years and three months, we had not been separated for more than a couple of weeks. I had started bird and waterfowl hunting with Bear. He lived with me in my solo camps all summer, rode with my wife and me cross-country to Alabama, Virginia, and North Carolina. I had no idea what to do without him. I cannot remember the rest of that day. I don't remember my wife coming home, or telling her what happened, or what we said. She was as close to Bear as I was; she had even saved his life when he was attacked by a Chow mix and a big Chesapeake in our yard, hammering the big dogs with a piece of firewood until they let him go.

It was cold. There was no hurry to bury him. I sat out in the late afternoon with his body. The days are so much longer in March, the daylight lingering, the winter so clearly over, a grim, almost unbearable contrast between the awakening earth, the light, and the inert black hide beside me, and I drank a pint of cheap whiskey, and for the first time, I cried.

My wife and I buried Bear the next morning at daybreak, on an island in the Bitterroot River. We left a sharptail wing to mark the spot, and we went home, to that silent house.

There were wonders still to come for us—a son and daughter, a small farm, new adventures, lives unfolding, expanding, other dogs and other hunts, the muted soul's cry of distant waterfowl on new winds. But there was never another time like that one, never another dog like Bear, never that much freedom, never again quite that seamless merging of myself and another being. Life goes on, they say. What they do not say—what is perhaps best left unsaid—is that so much of the best of it will only happen once. What I learned was to pay attention. Look around, feel this, love this, believe this. It is this way. And it will never be this way again.



SPIRITUAL SITE During a guided hike to the buffalo jump, used by Native people for hundreds or perhaps thousands of years, park manager Clark Carlson-Thompson shows visitors a pictograph (not visible in photo) depicting a tepee. "This one includes a lightning bolt indicating connections to the spiritual world," he says.

First Peoples Buffalo Jump State Park showcases a revered cultural landmark used by Native people to harvest bison for more than 600 years.

By Peggy O'Neill

A PLACE OF PROMINENCE

The 12-year-old boy, draped in a buffalo calf hide, sits amid a herd of cows and young bulls. His human scent is masked with sage he rubbed on his skin earlier. Though surrounded by dozens of bison that could stamp out his life in an instant, he's proud to have earned this role. He had to compete against other boys in his tribe to prove his courage, strength, and integrity. The elders selected him to be here among the buffalo herd, at the center of the circle of life.

The herd moves slowly, grazing. In the distance, several tribal members wearing wolf hides walk back and forth behind the bison, nudging the animals forward. If the drivers get too close, the herd will spook and race off, but they need to remain visible to keep the buffalo moving in the right direction.

The tribal member have asked these bison to give themselves up for the tribe and will thank the animals later for their sacrifice.

The boy identifies the lead cow. She's the one who keeps an eye on the herd, not letting calves stray too far. Hunched over, the buffalo runner, as he's called, begins to imitate a calf in distress. The cow notices and walks his way. He moves off, drawing the lead cow, and the rest of the herd follows.

The boy leads the herd across the plateau toward an unseen cliff between two rows of cairns. Hiding behind the rock piles are tribal members of all ages holding wolf hides. When the buffalo runner senses it's the right time, he signals to the others to stand, wave the hides, and make noise, frightening the herd into a stampede. ▸▸

He starts running toward a specific spot on the cliff, followed by the frenzied herd racing 35 miles per hour. When he reaches the edge, a tidal wave of bison fur and flesh almost at his heels, he jumps. But rather than plunging off the 50-foot drop to his death, the boy lands on a small sandstone ledge just a few feet below and tucks himself flat against the cliff face. The bison tumbling overhead aren't so fortunate. If the fall doesn't kill them, hunters wait below with arrows to finish them off. The young runner, who has practiced this maneuver dozens of times, safely observes the bloody work underneath from his rock perch.

SACRED EVENTS

"That must have been the first extreme sport!" exclaims Corette Maulding, a visitor to First Peoples Buffalo Jump State Park from Texas, breaking the spell of park manager Clark Carlson-Thompson's narrative.

It definitely would have been, except that it was not a sport, explains Carlson-Thompson to a group standing at the park's highest point. "The bison drives here were sacred events conducted by Indigenous people from throughout the region over hundreds or even thousands of years," he tells them.

From this plateau, the visitors can see the Highwood, Little Belt, Big Belt, and Adel mountains. Located near the tiny town of Ulm roughly 14 miles southwest of Great Falls, the park encompasses about 3,000 acres, including a sandstone cliff extending more than 1,500 yards. According to Carlson-Thompson, at least 13 Native tribes used the site as a buffalo jump.

"Tens of thousands of buffalo jumped to their death here," he says. The layer of bones, up to 15 feet thick, stretches along the base of the jump for a mile, creating what author Charles C. Mann described in a recent issue of *National Geographic* as the "relationship of [Native people] and the buffalo inscribed on the earth."

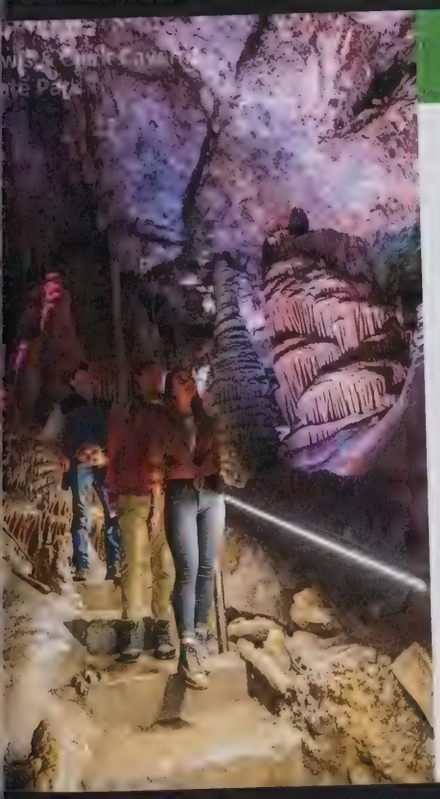
> **"The buffalo was everything to us."**

According to Donald Fish, a member of the Blackfeet Tribe, an instructor of Native American studies, and a former park ranger at the state park, Indigenous people had more than 300 uses for the buffalo killed here, including meat, robes, tools, bowstrings, tepee covers, bowls, and ingredients for blood pudding. "The buffalo was everything to us," says Fish. "According to our stories, a spiritual being showed us how to hunt the buffalo so we could survive. That made the jumps very special. We were able to kill a large number to feed people and provide hides and other essential materials."

Peggy O'Neill is chief of the FWP Communication Bureau.

MYSTERIOUS CREATURE Carlson-Thompson points to a partial pictograph, showing "some sort of animal," estimated to be 500 to 1,000 years old. The rest of the image was lost when the sandstone cliff broke off. Until it was protected as a state park, the site was mined during the mid-1900s for bison bones, used as crop fertilizer, and sandstone quarried for building construction. Far right: A visitor looks out at Square Butte in the distance.

LEFT TO RIGHT: ELIZA WILEY; ANDY AUSTIN



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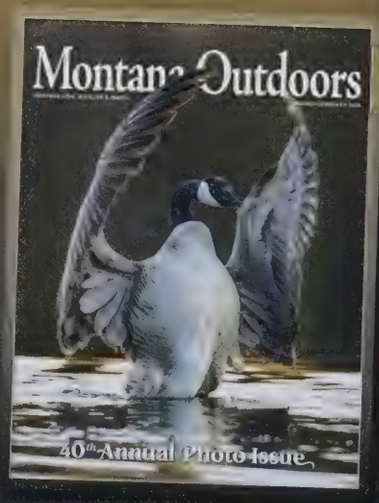

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The site sits on the Old North Trail, what the Blackfeet call *Miisum Apatosiosoko*, which runs north-south along the east flank of the Rockies between Alaska and Mexico and was used by travelers for thousands of years. The jump itself is a stretch of sandstone cliff in the shape of a horseshoe. According to Dr. Rachel Reckin, an archaeologist who manages the Montana Fish, Wildlife & Parks Heritage Resource Program, the site was used as a buffalo jump between 900 and 1,500 years ago and perhaps as long ago as 6,000 years.

SIGNIFICANT TO MANY

"The jump is absolutely massive—not just in size but also from a cultural and archaeological perspective," says Reckin. She notes that First Peoples is one of the two largest buffalo jumps in North America (the other is Head-Smashed-In World Heritage Site in southern Alberta). "It was significant to people throughout the region, and is part of the oral histories of the Blackfeet, Nez Perce, Salish, Kootenai, Pend d'Oreille, Shoshone, Assiniboine, Gros Ventre, and other tribes."

According to Kqyn Kuka, FWP tribal liaison and diversity coordinator and a Blackfeet member, FWP changed the park's name in 2007 from Ulm Pishkun (*Pishkun* comes from a Blackfeet word sometimes translated as "corral" and sometimes as "deep blood kettle"). "The idea was to respect the other tribes that also had used this site and considered it to be culturally and spiritually important," she says.

Kuka adds that FWP recently acquired a new lease that expands the park by nearly a square mile. The department is working with archaeologists to survey the new area and interview members of various tribes to learn what has been passed down in songs and stories about the buffalo jump.

One story concerns the ways various tribes coordinated use of the site, says Dugan Coburn, director of Indigenous education for Great Falls Schools and a Blackfeet member. "What our knowlege keepers have told me is that other tribes such as the Salish would ask the Blackfeet to use it for one or two weeks at a time, maybe offering shells or other items as payment," he says.

LANDSCAPE ENGINEERS

The jump sits at the edge of a vast grassland stretching for miles, which would have

Buffalo was the World, Walking

CLOCKWISE FROM TOP: BRAD AUSTIN; ARIEL FERN AND BRAD AUSTIN

INSIDE THE VISITOR CENTER Clockwise from top: The main exhibit hall in the park's visitor center provides details of the buffalo jump process and includes a tepee, drying rack, and encampment display surrounded by a mural depicting changing seasons; part of the vast diorama giving readers a sense of what the landscape looked like hundreds of years ago; visitors watch a demonstration by an AmeriCorps volunteer on the many uses of bison hides, including as clothing, containers, and sinew-based rope and lashings.

"The whole operation was enormously complex, starting with people on the plateau slowly nudging bison toward the edge."

attracted large herds seasonally migrating along the Front throughout the year. "It's the sheer size of the bison habitat above the jump that made it so popular with such a wide range of tribes," Reckin says.

Even with vast numbers of bison nearby, using an entire landscape to harvest the large, dangerous animals required specialized knowledge, planning, and coordination. "The whole operation was enormously complex, starting with people on the plateau slowly nudging the bison toward the edge—sometimes over a period of several days," Reckin says. Other tribal members were strategically stationed behind rock cairns, built as "drive lines" to funnel stampeding bison toward a specific spot on the cliff.

Tribal leaders also had to consider wind direction, weather, topography, bison behavior, and other factors in what archaeologists call "landscape engineering." "They basically used the environment and everything in it as a tool for harvest," Reckin says.

Coburn notes that driving and processing bison involved the entire tribal community. "Everyone—women, men, children, older people—had a role," he says. "A bison is a huge animal, and it takes great skill and hard work to butcher and skin it, scrape and tan the hide, make clothing and repair tepees from the hide, render the fat, make tools from the bones, and so on."

According to Reckin, no one knows why or when people stopped driving bison off the cliff at First People's Buffalo Jump. One theory is that the arrival of horses, originally from Spain, made it easier to hunt bison with spears, bow-and-arrows, and, later, rifles. "Use may have continued well into the 18th century, but we can't say for certain," she says.

European settlers quarried the sacred site for sandstone, some of which is still visible in Helena churches. Others mined the phosphorous-rich layer of bison bones for use in fertilizer and munitions. Between 1945 and 1957 alone, up to 150 tons were removed.

TRAILS AND TEPEES

Though the buffalo jump is the park's centerpiece, it's not the only attraction. Set back from the jump is a 6,000-square-foot visitor center that includes a fully mounted bison bull and an immersive interpretive hall furnished with murals, models, and

artifacts that help visitors experience the relationship between bison and the people who relied on them.

In the exhibit hall, visitors can hear recordings of Native people telling about the buffalo jump and their traditional lifestyle, says Karlene Faulkner, a member of the Great Falls–based Little Shell Band of Chippewa who has worked as a parks technician at the park since 2014. "We also have an authentic tepee, bison hides, and other displays showing what life was like here hundreds of years ago." A gift shop sells Native crafts, tribal music CDs, and wildlife books.

Faulkner says the first time she visited First Peoples Buffalo Jump, she knew she wanted to work at the park. "I feel a great sense of peace here, of connecting spiritually with the land," she says.

Outside the visitor center, a network of hiking trails provides vistas of the prairie and the Rocky Mountain Front. Visible 15 miles to the southwest stands Square Butte, one of several buttes that rise up along the Front. Hikers can find dozens of tepee rings, formed over centuries when people laid stones on the edges of buffalo-hide tepees to keep the relentless winds from blowing in. They can also borrow an interpretive guidebook from the visitor center to learn about the area's geology, native vegetation, and wildlife, such as the highly vocal prairie dogs scampering across the park's 200-acre prairie dog town.

The park holds no live bison, but visitors willing to drive a few hours can see the real deal at the National Bison Range north of Missoula and the Blackfeet Indian Reservation east of Glacier National Park.

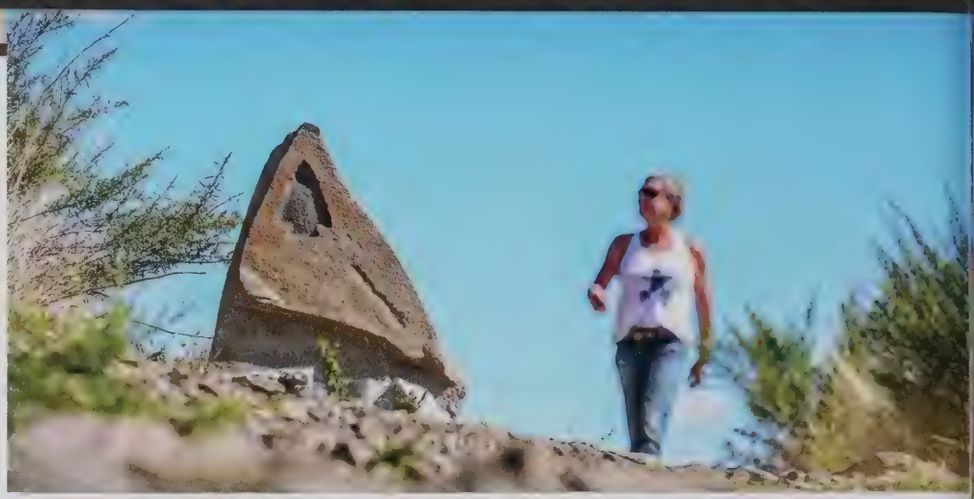
Snakes are another story. The park is home to plains garter snakes, bull snakes, yellow-bellied racers, and prairie rattlers. "Snake hikes" are led by Dan the "Snake Man," who teaches participants where the reptiles are most likely to be found and what to do when encountering them on trails.

ATLATL LESSONS

First Peoples Buffalo Jump also holds powwows and an annual kite festival, and offers weekly interpretive programs. Each August the park holds its annual Mammoth Hunt celebration, which features tomahawk throwing and long bow shooting, along with traditional children's games like "Run and Scream," which challenges participants to run as far as they can while yelling at the top of their lungs.

Mammoth Hunt visitors can also learn how to throw an atlatl from Jim Ray, a competitive thrower and expert at using this 10,000-year-old weapon, which predates the bow and arrow. "I was always interested in history and pre-history, and I've found that you learn about people by using their things," says Ray, a self-taught thrower who makes his own equipment.

You also learn about people by walking in their footsteps, says Coburn. First Peoples Buffalo Jump State Park gives visitors the opportunity to exit the rush of nearby Interstate 15 and take a walk back in time to a site sacred to people of the past and the present. "This continues to be a spiritual place for so many Native people," he says.



TOURING THE JUMP Above: A hiker nears one of the navigational guides on the Main Loop Trail. Right: Karlene Faulkner, a member of the Great Falls–based Little Shell Band of Chippewa who has worked at the park since 2014. "I love working here and informing visitors about this spiritual place and all that went into driving and processing the buffalo," she says. Far right: During a fall hike, visitors descend the top of the buffalo jump to a bench that connects to the main park trail.

> **"This continues to be a spiritual place for so many Native people."**

First Peoples Buffalo Jump State Park hours

- *April 12–September 12*: 8 a.m. to 6 p.m. daily
- *September 13–April 11*: 10 a.m.–4 p.m. Wednesday–Saturday; noon–4 p.m. Sunday.

Visit fwp.mt.gov/stateparks for more information. Contact the park at 406-866-2217; ccarlson-thompson@mt.gov.

Watch a YouTube video showing footage of the park at: youtu.be/Z6jb_C94E9s

ALL PHOTOS ELIZA WILEY EXCEPT STICK BALL AND BISON (ANDY AUSTIN) AND KARLENE FAULKNER (FWP/TOM DICKSON)

ACTION PACKED Clockwise from above left: Under the watchful eye of a volunteer, a boy throws a tomahawk at a target during the park's annual Mammoth Hunt celebration; a family plays "shinny," a precursor to modern field hockey, using traditional chokecherry branches and a ball made of buffalo hide stuffed with hair; longtime volunteer Jim Ray helps a novice select an atlatl dart and thrower. An atlatl expert who competes in tournaments, Ray taught himself to use the 10,000-year-old weapon. Native people used atlatls to kill short-faced bears that stood 12 feet tall, mammoths weighing up to 10 tons, and other beasts that once roamed the region in and around First Peoples Buffalo Jump State Park; a life-size bison mount greets guests in the park's museum-like visitor center.

HOW PREVALENT IS CWD?

Why FWP needs to understand the disease's pervasiveness in deer herds

by Paul Queneau

Few things are simple about chronic wasting disease (CWD), the brain-eating illness slowly spreading among Montana's deer herds. But there's one simple math calculation that can indicate just how strong a hold CWD has on any given deer herd.

It's called "prevalence."

Prevalence is determined by dividing the total number of animals tested in a given area by the number of CWD-positive results. "It gives us a clear idea of what percent of a herd is infected," says Dr. Emily Almberg, a wildlife disease ecologist with Montana Fish, Wildlife & Parks.

For instance, if FWP tests 100 deer from a hunting district and 15 are positive for CWD, the prevalence in that district is 15 percent.

It's an equation Almberg has done hundreds of times over the five years that she has helped lead the department's CWD management response since the disease was first detected in Montana's free-roaming big game herds in 2017. She says determining prevalence is essential for helping FWP figure out the best way to respond to outbreaks and understand how long the disease has been in an area. It also helps hunters decide where they want to hunt and what to do with a harvested deer.

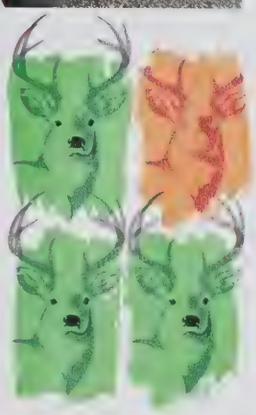
Though the math is easy, arriving at the equation's two numbers is difficult. It requires that hunters provide key data in the form of dead animals that are then tested for CWD. The more hunters who submit samples, and the more landowners who provide access to hunters, the more accurate Almberg's prevalence estimates become.

"Hunters are essential if we hope to slow the rate of spread of CWD, and we rely heavily on landowners, too," Almberg says. "Without public hunter access to private property, our tools for managing infected herds are extremely limited."

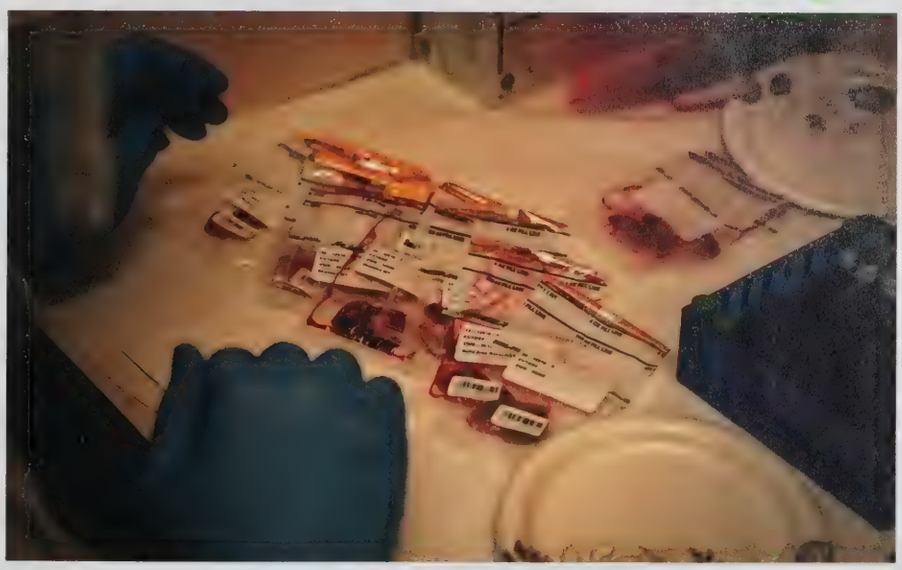
Neither a virus nor a bacteria, CWD is

Paul Queneau an editor for Bugle, *the magazine of the Rocky Mountain Elk Foundation. He lives in Missoula.*

> "Hunters are essential if we hope to slow the rate of spread of CWD, and we rely heavily on landowners, too."



NEEDING THE NODES Above: An FWP technician removes lymph nodes from a hunter's deer at a check station near Havre. Below: CWD sample kits containing lymph nodes submitted by hunters. FWP sends the kits to the Montana Veterinary Diagnostic Lab for testing.



FROM TOP: KENNETH PLOURDE/FWP; KURTIS FRASISER

caused by misfolded proteins called prions that attack the brains and other organs of mule deer, white-tailed deer, elk, and moose until it kills them. To date, there have been no reported cases of CWD infection in people. Infected animals will eventually show outward signs that can include weight loss, lethargy, drooling, droopy ears, and excessive drinking and urinating.

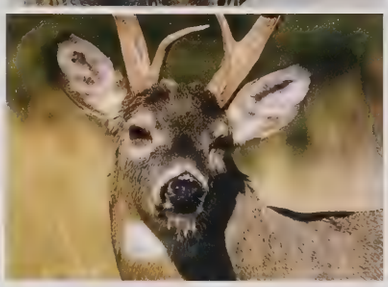
Those indicators are what led residents of the small northwestern Montana town of Libby to report an emaciated and sick-looking white-tailed deer inside the city limits in spring 2019. FWP officials euthanized and tested the sick doe, which soon proved to be the first positive case in Montana west of the Continental Divide.

Unfortunately, animals that reach such a state will likely have spread the disease to others. Infected animals may look healthy for two years or more while transmitting the disease to other deer, elk, or moose, usually in saliva through nose-to-nose contact. The only sure way to tell if an animal has CWD is through laboratory testing of the lymph nodes or brainstem. These tissues can only be collected from dead animals, and to accurately estimate prevalence, wildlife managers want to test as many samples as possible.

In Libby, FWP began trapping and euthanizing deer living in town while vastly increasing the number of doe hunting permits within a larger Libby CWD Management Zone. Those efforts would eventually reveal a 10-percent positivity rate (or prevalence) for deer inside Libby city limits and 4 percent in the surrounding special management zone.

More unwelcome surprises were in store.

"You do not get that kind of prevalence overnight."



TELL-TALE SIGNS: From top to bottom: Indications of CWD infections include droopy ears, excessive drooling, and emaciation. If you see deer with these symptoms, report them to FWP.

Also in 2019, a whitetail tested positive for CWD east of Dillon along the lower Ruby River in southwestern Montana. As in Libby, FWP conducted a special management hunt the following fall to boost harvest. As test results rolled in, more than one in five came back positive. By the end of 2021, prevalence rates in Hunting District 322 (where the lower Ruby is located) topped 30 percent, Montana's highest rate so far.

"You do not get that kind of prevalence overnight," says Austin Wieseler, an FWP wildlife health biologist who works closely with Almberg on CWD at the state wildlife health lab in Bozeman. "That means it's likely been there for years and maybe more than a decade."

High prevalence can lead to significant deer population declines. In Colorado, where CWD was first identified in a captive mule deer herd in 1967, some infected wild mule deer herds have experienced a 45 percent decline. "Numbers like that are one reason we take CWD so seriously," Wieseler says.

In 2021, Montana Fish, Wildlife & Parks tested 8,777 samples, of which 349 were positive.

Knowing prevalence guides the way FWP manages infected herds. In areas with high prevalence, wildlife managers may try to reduce total numbers more aggressively to contain the disease and lessen its spread within a herd and to nearby herds. Because bucks range much wider than does, bucks may be especially targeted. "Some hunters don't like us to reduce buck numbers, but that can be really important for controlling the spread of CWD," Almberg says.

Hunters: Get used to harvesting lymph nodes

Hunters in Montana can bring the heads of their harvested deer to FWP regional offices, where technicians remove lymph nodes for CWD testing. Hunters learn if their deer has CWD, in which case the meat should not be eaten but rather disposed of in a Type II landfill (see "Don't Move CWD Around," pages 14-15). Testing also provides FWP with information on the prevalence of the disease in specific areas across the state.

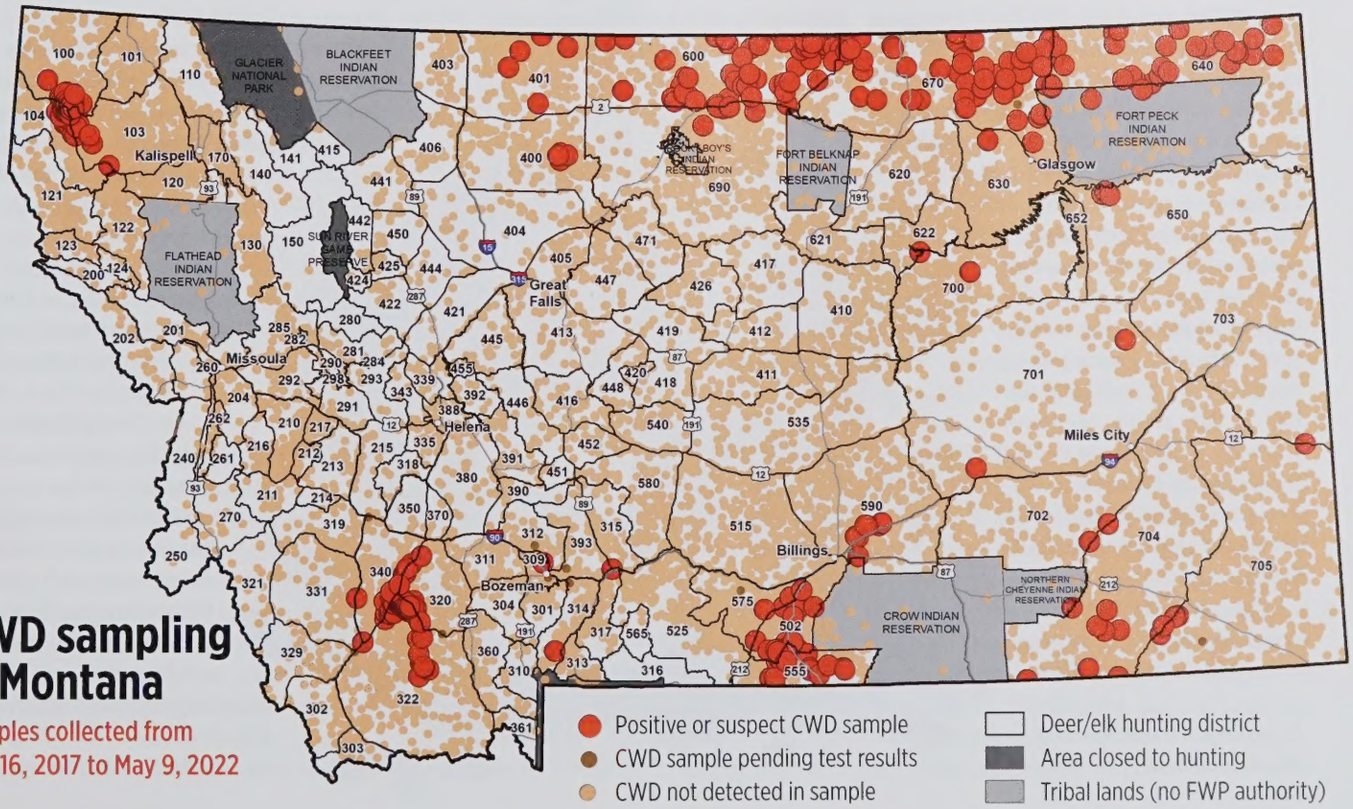
Because CWD is here to stay in Montana, FWP officials are looking for ways to make surveillance and management sustainable. "One way hunters can help is to become proficient in removing lymph nodes themselves," says Dr. Emily Almberg, FWP disease ecologist. "We'll still take care of the testing, but this small contribution from hunters will free up time and funding for conservation and management work."

FWP has produced a video and printable instructions with easy-to-follow steps to help hunters extract lymph nodes in the field. Find these resources at **fwp.mt.gov/cwd**.

FWP is hoping that lymph node removal becomes just another part of regular field dressing.

ALL PHOTOS: PAUL N. QUENEAU EXCEPT BOTTOM LEFT: TOM DICKSON

CWD CENTRAL Above: At the department's wildlife health lab in Bozeman, FWP wildlife disease ecologist Dr. Emily Almberg cuts out lymph nodes as Austin Wieseler, FWP wildlife health biologist, watches. Below: Intensive testing of deer sent to FWP by hunters allows FWP to determine the prevalence of CWD in an area and thus what measures may need to be taken to contain the disease there and reduce the risk of spreading.



FROM TOP: KURTIS FRASISER; MAP BY MONTANA FWP

Secret spots

By Tom Dickson

I knew I'd finally become a real Montana hunter the day I started lying about my hunting spots. It was not my proudest moment.

When I moved here 20 years ago, I wondered why people were so coy about where they fished and hunted. Montana is a sprawling 150,000 square miles in size, home to just 1 million people. Why all the secrecy?

When my then-boss pulled snapshots from his briefcase each November to show me the massive bull elk he or his son had shot, all he'd divulge was that they'd had been hunting "in the Gallatin Range." One friend said she and her husband regularly killed limits of pheasants "up on the Hi-Line." Another said his party did well on pronghorn "in Region 7"—an FWP geographic jurisdiction larger than Indiana.

But it didn't take me long to learn that, despite Montana's size, such directional indistinction was necessary. While afield, I kept running into people I knew, even hundreds of miles from Helena. The night before my first turkey hunt, in 2002, I camped in the Custer National Forest east of Ashland, a six-hour drive from home, and woke to find an FWP colleague in a trailer parked next to my tent. The next year, while camped along the Big Hole River, I looked up to see a neighbor from across the street floating past in a raft. Since then, I've bumped into friends or colleagues while camping at Nelson Reservoir, hunting deer north of Lewistown, and fixing a flat along Montana Highway 87 in remote Petroleum County. Once I ran into a co-worker and his son in the middle of the Bob Marshall Wilderness.

That's when I finally understood what people mean when they describe Montana as "a small town with long streets." And why, despite all the space here, a person needs to keep secret spots close to the vest.

If possible, I try not to outright lie. When someone asks where I hunt ducks each January, my answer of "on the Missouri" is factually correct. It's just not helpful to someone who'd like to shoot a few mallards for themselves. Which is the point.

Secrets spots are precious real estate. Over the past two decades I've driven thousands of miles, examined hundreds of public land parcels, and knocked on dozens of doors searching for places to hunt deer, waterfowl, and upland birds. Some hunters study topographic and land ownership maps all year long looking for out-of-the-way pieces of public property. Others cultivate lasting relationships with ranchers and farmers. You don't just give something like that away.

Let's say you generously take a buddy to a sweet little state section that holds a few roosters, and the following weekend he lets slip the location to his sister-in-law, who then innocently tells a colleague at work. Next thing you know, a half-dozen hunters and their dogs have vacuumed up every ringneck left in your no-longer-secret spot.

Because it doesn't take much additional pressure to ruin a top-notch hunting or fishing location, secrecy is paramount. Two friends and I once hired a fishing guide in British Columbia who took us down a steep mountainside to a prime bull trout pool on the Wigwam River. He parked a half-mile away from the trail and made us sneak in because, he told us, local anglers often tailed his truck. A hunting buddy leaves his vehicle at a parking lot in Bowdoin National Wildlife Refuge then jogs for 20 minutes, glancing over his shoulder the entire time, to an adjacent Bureau of Reclamation cattail slough that's sometimes loaded with roosters.

All this sneaking around takes its toll. I'm a forthright fellow who doesn't like to mislead anyone, especially friends. But when heading out with a buddy, do we only visit spots we both know about? Or does one of us share a secret location—and, if so, what's the protocol afterward?

In my circle, we never return to an area someone has offered up unless they invite us back or grant permission. And if given the green light, we don't milk the spot by returning too often, and we *never* go back with someone else.

Sadly, secret spots are becoming harder to find and keep. That remote elk park you discovered after hiking all day last fall is visible via Google Earth or the onX app to anyone with a computer. And as more and more private property gets leased or posted, the rest of us are squeezed onto the limited land that's left.

Which means we anglers and hunters need to keep searching for secret spots. And, I'm sorry to say, do whatever it takes to keep them that way.

ILLUSTRATION BY STAN FELLOWS

Tom Dickson is the Montana Outdoors *editor.*

Black-backed woodpecker

Picoides arcticus By Sneed B. Collard III

SCIENTIFIC NAME *Picus* is Latin for woodpecker, from a legend in which the enchantress Circe turned Picus, the son of Saturn, into a woodpecker; *-oides* is Greek for "resembling," so *Picoides* means "woodpecker-like." The word *arcticus* is Latin for northern or arctic.

At first glance the newly burned forest looked devoid of life, with acres of charred dead trees standing like silent sentinels on the slopes. Still, my son Braden tapped a key on his smartphone and raised a Bluetooth speaker over his head. A second later, the recording of a woodpecker drumming in rapid-fire staccato burst across the landscape. Braden let it play for a few moments and then turned it off.

"There!" I shouted, as a dark shape swooped down the mountain and landed in a dead tree above us. Our hearts racing, we lifted our binoculars to admire a bird that was not only incredibly handsome, but a key to bringing this burned forest back to life: the black-backed woodpecker.

APPEARANCE

The black-backed woodpecker dresses to suit its name, sporting a solid, charcoal-colored topcoat that makes it almost invisible against the charred trunks of trees. Only from the side or in flight does the bird reveal its white throat and speckled black-and-white breast. The black-backed and the closely related American three-toed woodpecker stand out from all other U.S. woodpeckers in that they have three toes rather than four, and males have stunning yellow crowns instead of the traditional woodpecker red. A smattering of white on its back distinguishes the American three-toed, another Montana native woodpecker, from its all-black-backed cousin.

SOUND

The black-backed's staccato drumming often reveals its presence in a burned forest, especially when the bird is staking out territory or trying to attract a springtime mate. This "snare drum roll" would be the envy of any marching band, staying remarkably consistent during its two-second duration. Like many other woodpeckers, the black-backed also unleashes a variety of squeaky and clicky calls, including a "scream-rattle-snarl" call during aggressive interactions with other woodpeckers.

HABITAT AND DISTRIBUTION

Though occasionally found in live forests, the black-backed is the ultimate burn specialist. It prefers the aftermath of "hotter" fires that produce lots of dead, large-diameter trees. After four or five years, it usually abandons an area to seek out fresher burns. As its scientific name indicates, the black-backed resides mostly in northern forests across the continent. Maine, western Montana, and northern Idaho serve as U.S. strongholds for the species, but its range also follows the Cascades down into California's Sierra Nevada.

FEEDING

The black-backed feeds mainly on wood-boring beetle grubs that thrive in the dead trees of a newly burned forest. "Wood-boring beetle larvae are in deeper than bark beetle larvae," says Dick Hutto, previously director of the University of Montana's Avian Science Center. "Most woodpeckers are getting bark beetles and stuff, but black-backed woodpeckers are digging in deeper to get the bigger larvae."

BREEDING

Both males and females participate in excavating the nest hole, incubating the eggs, and feeding the ravenous young a steady diet of larval and adult insects. Typically, the female lays three or four white, oval eggs. The young leave the nest three to four weeks after hatching, usually from early June to early July.

Interestingly, only the black-backed, American three-toed, and hairy woodpeckers have the ability to dig fresh nest cavities in the cement-hard wood of freshly charred trees.

KEYSTONE IMPORTANCE

The black-backed woodpecker serves as a keystone species by creating critical nest holes for other cavity-nesting birds. These other species enjoy high nesting success where fire has cleared out chipmunks, squirrels, and other small mammals that prey on eggs and hatchlings. Eventually, black-backed holes serve as homes for a wide variety of wildlife—including mammals and other woodpeckers (see "Lewis's woodpecker," *Montana Outdoors*, March-April 2022).

CONSERVATION

Scientists don't consider the black-backed a threatened species, but because the bird lives in remote areas, little is known about its population dynamics. Salvage logging reduces suitable habitat for this woodpecker species. The permanent loss or degradation of northern forests from climate change also could harm populations. But for now, the increase in forest fires across the bird's western range is providing additional habitat.

Sneed B. Collard III is a writer in Missoula.

SHARON DEWART-HANSEN

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Whether it's by fishing, camping, boating, mountain biking, hiking, wildlife watching, or **bowhunting in the Yaak Valley,** Montana is a state where everyone can find their own special way to connect with the natural world. Around here, **the outside is in us all.**

PHOTO BY DONALD M. JONES

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